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FORESTRY AND FOREST RESOURCES IN NEW YORK*

By State Forester F. A. Gaylord

In New York State, forests cover about 7,500,000 acres. With the farm wood lots the forested area is brought up to 12,000,000 acres. In all the 12,000,000 acres it can safely be said that there are not 1,000 acres that are producing more than half the wood material which they could under proper management. There are 300,000 acres of virgin forests, where growth is offset by decay. There are 400,000 acres of barren land producing nothing. There are about 5,000,000 acres cut and burned over which are partially restocking, the remaining area being in a more satisfactory condition as far as irregular natural production is concerned.

Here in New York, where we are very far away from the great present sources of timber, we are only too ready to believe that these areas will supply us indefinitely. This is far from being the truth. To bring this out more clearly, let us take an example from the eastern States.

With the exception of comparatively small areas in the Lake States, the white pine of the East has been entirely cut. This is well brought home to us by the fact that in 1850 Albany was the most important timber market in the United States, while today she has practically no influence whatever on the lumber trade of the country. In that year New York ranked first in timber production, today she ranks nineteenth, and she nowhere near begins to cut the timber that she uses. As another example of the rise and decline of a State in timber production, in 1880 Michigan supplied 25 per cent of the timber of the United States. In 1907 she supplied 4.05 per cent. If this is true of New York and Michigan, why will it not be true of other States, especially if we bear in mind that now we have a national population of 95,000,000 people and fifty years hence this will have grown to 200,000,000.

At present we have in New York State about 6,000,000 acres of forested lands, which has saw timber on it; 300,000 of this is virgin and the rest has been cut over more or less severely, so that the average stand is about 4,000 board feet per acre, giving a total stand of saw timber of about 25,000,000,000 board feet. Aside from this amount there are about 30,000,000 cords of wood occurring on the remaining forest area, and as waste from logging operations.

The forests of our State in their present condition are not producing more than 25 board feet per acre per year. This, for 12,000,000 acres, gives 300,000,000 board feet per year. The lumber statistics of the State show that we are cutting over 1,000,000,000 board feet annually. This figure does not take into consideration the immense amount of cord wood needed to supply the demands of the population of 10,000,000 people. Taking this into consideration, we are cutting our woodlands at least five times as fast as they grow, and at the same time we are importing vast quantities from other States. We get much construction timber from the South, carriage woods from the Mississippi valley and the South, shingles from the West, pulp from Canada, etc. How long will this state of affairs continue, as there is hardly a State in the

Union where cutting is not being carried on in excess of the growth.

We can triple the growth of our forests by means of proper management. We can reduce wastes to a very great extent. We can do away very largely with forest fires. While we are accomplishing this, our population is increasing by leaps and bounds and not only increasing the demand, but taking up land where we now grow timber.

Every minute lost in taking the proper care of our forests will be dearly paid for in the future.

In New York there are 400,000 acres absolutely denuded of valuable forest growth. This area will have to be replanted at an expense of three or four million dollars if we are to re-establish a profitable forest cover. There are several million acres which at the present time are only partially covered with valuable species. Here as much more money will have to be spent if the maximum yield of our forests is to be obtained.

A great deal of our forested area is in a most inferior condition. It has largely been cut over and even where the cover is complete the trees left are of inferior species or in a dead or dying condition, and they are acting as a great hindrance to the proper growth of the young and more valuable trees.

The density of the forest then has been utterly destroyed in part and very much lessened on a large portion of its area. This has resulted in the total or partial destruction of the forest floor; that is, the humus or vegetable mould has been burned up, either by fire or by the sun. Where the cover has entirely disappeared erosion sets in, as there is nothing left in the soil to bind it together. It slowly works down the slopes of the hills and mountains to eventually choke our rivers and harbors or be spread out over our fertile valley farms and cause total destruction.

There has been enacted in this State considerable forest fire legislation. In the first place it has been attempted to do away with the material which causes the worst of forest fires, that is the slash left by the lumbermen. Slash is of two kinds, hardwood and softwood slash. The hardwood slash disappears much more quickly than the softwood, and this has not been covered by legislation. The question has been with the softwood or evergreen tree tops.

Under ordinary conditions the top left after the logs are cut is held up off the ground by the lower branches and during the fire season becomes dry as tinder and constitutes a serious fire danger for from fifteen to twenty years. Since 1909 loggers have been compelled by law to lop or cut off the limbs from all tops so that the refuse will all lie close to the ground. This was done in order to do away with the fire danger as soon as possible, as the top will disappear through decay much sooner if all branches are lying on the ground than if they are held up in the air. The reasons for this are that the fungus causing decay requires air and moisture for the proper carrying on of its work. The top when it is held up from the ground has plenty of air, but moisture at the proper time of year is lacking. On the other hand, wood completely submerged in water does not decay, as the air is lacking. The conditions most favorable for the growth of rot exists at the surface of the ground and if all branches lie as close to the ground as possible, they will disappear in the mimimum time. The best proof that this is so lies in the fact that our fence posts, telegraph and telephone poles, etc., have by far the greatest amount of decay at the point where they enter the ground. The least observing person knows that this is true, and it is well brought out by the fact that if any single part of a pole is to be treated with preservative, it is this point, and many companies imbed their poles in concrete for a foot or so at the surface of the ground. There cannot be the slightest doubt then that the tops will decay more quickly lopped than unlopped.

In cases where tops have been lopped, the slash has disappeared, as a fire danger, in six to seven years. So far so good.

Let us first consider the management of our spruce lands. These areas can

THE ADIRONDACK FOREST.

A VIRGIN STAND OF TIMBER.

REPRODUCTION UNDER MATURE TIMBER.

be roughly divided into spruce slopes, spruce flats, and spruce swamps.

The management of our spruce slopes, particularly the high slopes, is a difficult proposition. The timber on such a location is usually quite uniform but smaller in diameter and shorter and is much more liable to be wind thrown than the spruce on the lower situations. The use of a diameter limit under such conditions does not bring good results as a rule. Practically all the trees that are left below the limit set, provided we take out enough to make the operation profitable, are wind thrown and such trees, of course, had better be taken out during the lumbering operations.

The best method to use would probably be some sort of a clear cutting operation by strips or groups. Seed trees might be left as groups of trees covering perhaps a tenth of an acre and thus would give mutual protection against the wind. A system of clear cutting by strips might work out very well under these conditions, cutting say a strip about 100 to 150 feet wide and leaving a strip of equal width to be taken out at a second operation after reproduction is established on the cut-over strip. In any method of leaving trees for the distribution of seed, it must be remembered that good natural reproduction cannot be counted upon to take place any farther from the base of the trees than a distance equal to the height of the tree or half again that distance. This rule, of course, would have exceptions, varying with the topography of the country and the species.

To consider the management of spruce flat. This is the best type of spruce timber and can oftentimes be managed by a diameter limit cutting. In the case of all diameter limits, we must be sure and not make them rigid. In scientific management the first principle is to insure reproduction and oftentimes in cutting to a rigid diameter limit there are not enough seed bearing trees left on an area to give the proper reproduction. Our system of cutting should be such that wherever it is necessary to leave trees over the given diameter, it should be possible to do so. In this type of spruce windfall is of the least importance. However, even here we must be very careful, if the stand is anything like pure spruce, to eliminate as much as possible the loss through windfall by judicial cutting.

On such locations the spruce is oftentimes small and of a very even diameter, and cutting to a diameter limit oftentimes means taking all or none. The cutting system should be such that it would be possible to remove all timber not needed for the regeneration of the stand and yet at the same time prepare against windfall loss, as on this type of soil the windfall damage is liable to be quite severe.

Virgin white pine stands should be handled by some sort of a clear cutting method, leaving seed trees as individuals or groups. Wherever seed trees are left as individuals the loss is oftentimes as high as 75 or 80 per cent. through windfall and much the better system is to leave the seed trees in small groups uniformly scattered over the cutting areas. On some operations the groups left have contained 25 to 30 per cent. of the original stand and after reproduction is established there is enough timber left in the groups to make a second cut profitable and thus our seed trees are not left at a loss as they might be if only just enough trees were allowed to remain to insure reproduction.

Here, as with the spruce types, a diameter limit should be an elastic one, cutting over or under as conditions warrant, but keeping, on the whole, to an average diameter. In the case of good markets and easy access to the forests, a selection system is sometimes used, cutting out from time to time only the best individuals. Unless the method is very carefully carried out it is very liable to result in deterioration of the forest.

Second growth white pine will have to be managed differently in most cases. Here we will not be willing to wait until the trees are old enough to bear sufficient seed and as these second growth stands can usually be termed even aged, they will have to be clear cut and planted to have anything like satisfactory resulting conditions.

RESULT OF LUMBERING AND FIRE.

RESULT OF A CROWN FIRE.

OBSERVATION TOWER ON A MOUNTAIN TOP.

In cutting hardwoods for saw timber, a rigid diameter limit is usually employed and the forests are left in an extremely bad condition due to the fact that all old culls are left on the ground and these usually form a large per cent of the stand in the Adirondack region. These culls should be removed whereever it can be done without loss and where they have to be left they should be killed by girdling in order to give the young trees all the light and soil energy.

The first cutting in hardwood stands is sometimes a selection cutting, taking out the cherry or ash or whatever the most valuable species may be and thus practically doing away with any possible reproduction of the species bringing in the greatest return. If a hardwood stand is to be kept at anything like its maximum capacity, we must aim in all operations to get rid of the large, overmature and decayed specimens which are commonly called culls. Of course this means much added expense during the first operations, but it means also a tremendous financial gain at future cuts. On the whole, then, hardwoods could probably be cut to advantage by using an elastic diameter limit, taking care in all cases to make such cuttings as will improve the condition of the stand.

The greatest future profit could probably be realized from hardwood stands by underplanting with softwood species.

The consideration of lumbering methods and markets hardly need be commented on, as such studies would be absolutely necessary to any operation.

WHAT FORESTRY HAS DONE.

Most people who have been interested in the subject of conservation for the past few years know that this movement is nothing new to the world, but that it has been practiced for centuries by many of the European countries. In fact forestry is practiced by every civilized country in the world except China and Turkey, and these countries, China in particular, are glaring examples of what deforestation can do to wreck the prosperity of a nation.

These two countries are close to the bottom of the scale of civilization and bring out well the force of the statement that the progressiveness of a country can be measured directly from its practice of forestry.

England is the only exception to this rule and before long she must take decided steps in reforestation, as the timber exporting countries of Europe are fast coming to the point where they need at home all they are able to produce.

The principles of forestry are much the same the world over and they may be reduced to two fundamental principles. First, that of obtaining a maximum yield per acre from forest land; second, cutting annually only what the forests produce.

The European countries have passed through the stage in which the United States finds herself today. Forestry in the United States as it is being put forward by its exponents is not guess work by mad theorists; it is a definite, practical science, which has been worked up by countries which have been forced to provide a wood supply and forest cover or perish from the earth. The countries which have gone farthest in this direction and have the smallest areas of waste land are those which are the most prosperous and have the brighest future. They are also the countries which have spent the most money per acre for forestry.

WHAT FORESTRY CAN DO.

By looking over the examples of forestry in other countries, we can see very plainly that forestry pays; and it pays returns in a like proportion to the money expended for proper management.

The United States is as yet only in the first stages of a good conservation policy and it is extremely important that, if we wish to preserve our prosperity, we learn from the experiences of other countries, rather than wait to be forced into the proper channels.

Forestry in the United States and particularly in New York State can accomplish certain results. This is not

UNLOPPED TREE TOP.

TREE TOP PROPERLY LOPPED.

WHITE PINE STAND IN NEED OF THINNING.

guess work, as we have history and figures from European countries, therefore we are not starting out on something of which we do not know the final outcome.

The variety and value of our forests are unequalled anywhere in the world. The transportation facilities of the United States are the best in the world and enable us to exploit all forest regions so that timber best suited to certain uses can be so uesd.

Many of the large lumber companies in the State are planting up their land. The lumber companies of New York are not doing this because it increases the beauty of the country or to protect the watersheds. They are doing it because they consider it a good financial investment.

SAME STAND PROPERLY THINNED.

Practically all of the large operators in the Adirondacks are cutting to a diameter limit. This limit is too low in most cases, but it is a start in the right direction. As the market conditions improve, the intensiveness of this management will increase, as lumbermen are primarily business men.

It is the duty of foresters and forestry to show why management should be carried beyond the present market conditions; to show that plantations made properly and cared for as they should be will yield three or four times the quantity of timber per acre that nature would yield if left to herself. This timber will be straight, with but little taper and will contain as much clear

LOGS ON THE SKIDWAY IN THE WOODS.

LOGS BEING DRIVEN TO THE MILL.

lumber as the size of the tree will permit. The timber will be grown in the shortest possible time.

If we do not care to plant, and it really is not necessary in many places, the practice of good sane forestry will cut our crop in such a manner that the resulting conditions will be the best possible for the future crop. It will reproduce our stand to the species which are the most valuable and it will determine just when our crops should be cut in order to yield the greatest financial return. It would also take into consideration the market conditions. For example, a practice of forestry would not allow the cutting into cordwood or acid wood such trees as might be sawn into $60 lumber.

In fact forestry means nothing more nor less than getting the greatest yield from a tract of woodland in the shortest time at the least expense.

From a forestry standpoint conditions over the greater part of the Adirondacks are very poor. As Gifford Pinchot said recently, "Forestry is practiced everywhere in New York State except in the woods." There are some exceptions to this, of course, but in the main it is very true.

A crop started now would hardly be mature by the time there is a serious shortage of native timber and stumpage will be a great deal more valuable than at the present time. Bearing this in mind, it is possible to do a great deal now that the present market conditions do not warrant.

Aside from the Adirondack and Catskill regions there is a big opening for forestry in connection with farms and in the establishment of communal forests. There are over 4,000,000 acres in farm wood lots and 2,000,000 acres of unimproved farm land in New York State. A great deal of this must remain under forest cover and where the wood lots of the State are earning from 25 to 50 cents per acre per annum they will furnish a net revenue under intensive management of $4 to $5 per acre.

To sum up, a proper regard for the principles of forestry will keep our forest cover intact or practically so, it will do away with fire and will therefore make our hill and mountain sides the much needed reservoirs for our streams and thereby save the country from the waste of floods and insure the maximum amount of power to our industries, as well as furnish them a maximum supply of wood.

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*Extracts from a recent bulletin issued by the New York Conservation Commission.

AFFORESTATION IN SOUTH MANCHURIA

Saplings of pine and acacia trees were transplanted by hundreds of thousands last year on the bare hillsides extending from Sungshoushan to East Chikuanshan, Port Arthur. The civil government office has decided to transplant over 800,000 saplings of scrub oak, pine, and acacia in an area of about 360,000 tsubo (about 295 acres) on the same hillsides next year. This will complete the afforestation program for the range of hills running in the shape of a crescent along the northeast of the fortress town.

FORESTS IN CHILE

The Chilean Congress is seriously discussing a revision of the forestry laws of that country with a view to preserving the large area of forests now in existence and to increasing them in the arid portions of the country north of Valparaiso. During the past few years large areas of forest lands have been cleared for agricultural purposes and it is still going on.

The forests of Chile contain several classes of very useful timber, among them being roble, known as Chile oak, and very useful where strength is required; rauli, valuable for furniture, giving a good polish and grain; lingue, noted for its excellent tanning bark, said to equal the tree known for this property; quillay, or soap tree, very valuable for its bark for cleansing purposes (it yields also fair timber); elmo, or elm, that grows very large and makes about the best light lumber produced in the country.

THE SALVATION OF THE ALASKAN FUR SEAL HERD

By Henry W. Elliott

WHEN I returned in 1874 to the Smithsonian Institution, after spending the seasons of 1872-74 on the Seal Islands of Alaska as the agent of that establishment and of the Treasury Department, I submitted the results of my investigations and my collections to Professors Henry and Baird.

One of the most interesting of the returns was my census of the fur seal herd, whereby I exhibited proof that at least 4,700,000 seals of all classes were in existence on and around the Pribilof Islands during the summer of 1874. The complete elaboration and publication of this work was made in 1880-81, and published by the 10th Census, U. S. A., Vol. VIII, and by the U. S. Commission of Fish and Fisheries, as Special Bulletin 176, 1882.

In 1889, when the subject of whether the lease should be renewed on the same general terms as had been fixed in the first one dated May 1, 1870, a dispute arose as to the condition of this seal herd, and the number of seals which could be safely killed annually by the lessees. The old lease permitted a maximum of 100,000 per annum: but the agent of the department in 1899, reported that it was not possible or proper to kill more than 60,000 in 1890, and that that number should be fixed as the maximum in the new lease, to date from May 1, 1890, for 20 years.

Secretary Windom, accordingly, so ordered it. His action stirred up bitter criticism by the new lessees. He therefore sent for me and asked me to make an investigation of the conditions as I should find them on the islands. An Act of Congress approved April 22, 1874, was my warrant for going as Secretary Windom's special agent for that purpose. I landed on the Seal Islands May 21, 1890, and went to work. I returned and placed the finished report in Mr. Windom's hands on November 19, 1890.

I reported that I had found a "scant million" of seals in the herd which numbered 4,700,000 in 1872-74. I urged an immediate suspension of all work of the lessees and submitted those records of that killing which warranted this suspension. I also asked that steps be taken to induce Great Britain to co-operate with us at once so as to prevent any and all pelagic sealing, which had suddenly become since 1886 a positive and certain menace to the life of the herd.

I objected to the claims being made by Mr. Blaine of certain jurisdiction over the open waters of Bering Sea and of a property right in the bodies of the seals no matter where and when they were found at sea. I was so insistent on this objection that I parted company with Secretary Blaine April 22, 1891, and withdrew from any and all connection with the Government in the preparation and submission of the case to the Bering Sea Tribunal at Paris, 1891-93, inclusive.

The result of the work of that tribunal, when fully disclosed by the end of the season of 1894, declared its flat failure to save the fur seal herd of Alaska from the destruction it was to prevent. Then ensued attempts to re-open and revise these abortive rules and regulations of the Bering Sea Tribunal begun in 1895 by Governor Dingley in the House and renewed by him in 1896, only to end in the failure of each and every move made to that end, until John Hay took the subject up in 1900-1904 with me. The Act of April 8, 1904, which re-opened and provided for a revision of the Bering Sea Tribunal's award, was secured by my active personal work and I was then asked by Mr. Hay to frame up a treaty of settlement for this vexatious dispute.

HENRY W. ELLIOTT.

"The man who did by far the most of the work that saveed the fur seal industry to the people of the United States."

W. T. Hornaday.

I then prepared the first draft, which was submitted to the Canadian Government April 16, 1904, by Mr. Hay. It was not satisfactory or definite enough to meet Sir Wilfred Laurier's idea; so on Feb. 28, 1905, I outlined and submitted to Mr. Hay the plan of "mutual concession and joint control," which is now in effect. Then, on Mr. Hay's request, the Senatorial Committee (Governor Dillingham, Chairman), approved it March 17, 1905. But Mr. Hay's illness, which caused him to leave the Department of State March 15, 1905, never to return to resume his official duties, caused a total suspension of this work until it was forced up and out Feb. 8, 1911, as follows:

The Canadians served notice on us in 1897-99 that as long as we fostered private interests (i. e., leased the islands to contractors) they would do nothing to disturb their private interests at work in killing seals at sea (i. e., the pelagic hunters). I understood that sentiment well in 1890-91, and vainly endeavored then to get Mr. Blaine to recognize its importance. John Hay promptly saw

DR. W. T. HORNADAY.
A leading member of The Camp Fire Club of America and director of the New York Zoological Society.

it, and approved the suggestion. The lessees exerted their influence on him as they had so successfully done on Mr. Blaine, but in vain. Had John Hay not fallen ill, March 14, 1905, this treaty of today, the "Hay-Elliott" Treaty of March 7-17, 1905, would have been in effect by June, 1905.

Mr. Hay's death, July 1, 1905, put the lessees into the saddle again, and not a move to disturb them was made by the officialism in charge of this business until they had nearly finished the full term of their twenty-year lease, in 1909, and then attempted to have it renewed with the full consent and approval of the Secretary of Commerce and Labor, Mr. Nagel.

Then the trouble began for Nagel, and incidentally for Knox. When the semi-official press dispatches from Nagel carried the news that he was about to renew that seal lease, the Camp Fire Club of America, aroused by its sinister import, warned Nagel not to do it; it issued an appeal to the country which was extensively published December 12, 1909; this publication set forth the reasons why that lease was one of the chief causes of destruction of the seal herd,

THE "ROOKERY" AND "HAULING GROUNDS" OF "POLAVINA": SAINT PAUL'S ISLAND, PRIBYLOV GROUP: BERING SEA.

This breeding-ground contained, in 1872, at the time the above picture was made, about 400,000 fur-seals, of all ages. The "bulls," "cows" and "pups" occupied the space in the foreground, and the "hauling-grounds" in the rear were occupied by the yearlings and "bachelor" seals. One mile from the foreground to the distant bluffs, and from 500 to 1,000 yards back from the cliffs, every vestige of grass and vegetation had been polished off by these seals. Last summer, not one seal hauled out on this great plateau, and the ground was covered with grass and flowers. Of the multitude shown above, not more than 2,500 head now survive on this "rookery."

and urged all good citizens to write to their representatives in the Senate and the House to enact legislation which would prevent its renewal, etc.

Under the lead of Dr. W. T. Hornaday (who came to Washington), the Camp Fire Club so stirred the Senate Committee on Conservation of National Resources, that on February 26, 1910, it notified Nagel that that lease must not be renewed. It then pasesd a bill in the Senate, March 20, 1910, which repealed the leasing law and which it believed paved the way to an immediate taking up of the Hay-Elliott treaty plan of March 7-17, 1905, and a close season of at least five years to all commercial killing of seals on the Pribilof Islands.

But Secretary Nagel did not respect this understanding with the Senate Committee, and resumed the killing of seals in 1910, taking 12,920 that year, of which 7,733 were so taken in violation of his own rules and the law. This violation is now a matter of official record and is indisputable.

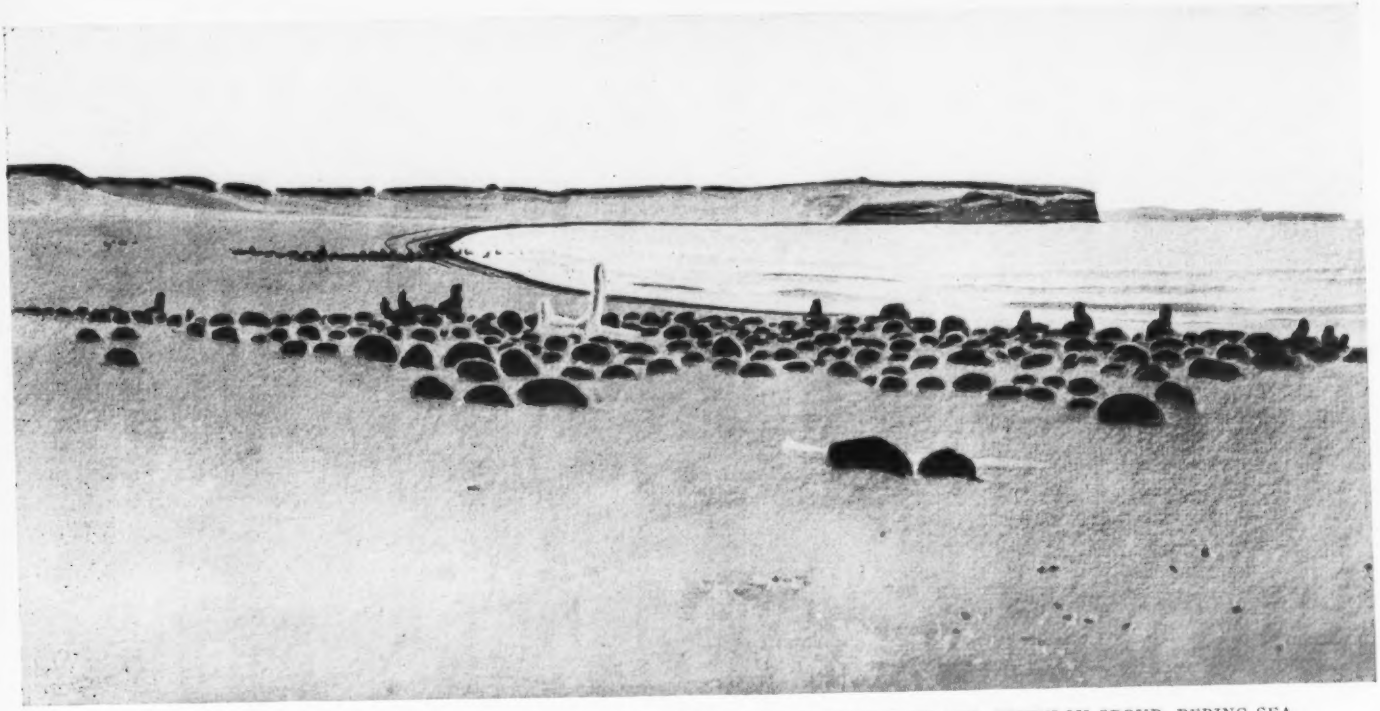
This stirred the Camp Fire Club to renewed action and, on Jan. 9, 1911, Senator Knute Nelson introduced a bill (S. 9959) which peremptorily suspended Nagel's work on the islands and renewed the demand for a treaty to prevent pelagic sealing. I sent to Senators Nelson, Dillingham and Dixon the proof of Canada's willingness to immediately sign with the State Department a fur seal treaty based on the Hay-Elliott *memorandum,* and Senator Dixon himself, on January 19, 1911, took this proof to the Department of State. It was not denied there, and the officials concerned declared that this treaty would be speedily taken up with Canada; that it would be submitted to the Senate "in a few days," etc.

On February 2, 1911, having heard that this treaty was not being taken up, Senator Dixon called a meeting of his Committee on Conservation of National Resources for February 4, 1911, and summoned Hornaday, Nagel and myself to appear and to be heard on the Nelson bill (S. 9959), then pending before it. The Committee asembled and Messrs. Hornaday, Nagel and his officials and I appeared promptly at 10 a. m., when a message from the Secretary of State was given to the Committee, asking that no action be taken on the bill since the "fur seal treaty would be sent to the Senate by next Wednesday," Feb. 8, etc., i. e., a treaty between Great Britain and the United States. A treaty was submitted. It was referred to the Senate Foreign Relations Committee, and on Feb. 15, 1911, reported back to the Senate *without amendment,* and *ratified without a dissenting vote on that same day.* The terms of "mutual control and concession" were kept secret until Japan and Russia came into agreement with them. This complete accord was reached July 7, 1911, and the Senate confirmed it July 24, 1911, two days after it was received from the State Department, *without a dissenting vote,* or *a word spoken on the floor!*

This fur seal treaty now in effect is exactly as I drew its terms in 1905, and as it was approved then by John Hay, Sir Mortimer Durand, the British Ambassador, and the Alaskan Committee, consisting of Senators Dillingham, Nelson and Burnham. This proof of its origin was distinctly given to the Senate when the bill putting it into effect was passed by the Senate, August 15, 1912, by Senators Nelson and Dillingham, and not disputed by a single soul on that floor, but admittetd as such by Senator Root.

Why was this bill putting into effect that treaty of July 7, 1911, not passed until August 15, 1912? Why was a bill introduced December 21, 1911, not acted upon until the late date just cited? The reason is that its opponents deliberately drew a bill at the opening of the session, in December last, which, *if not amended, would have nullified the express terms of the treaty itself* and *defeated the attainment most desired by the treaty makers—the restoration* of this pitiful remnant of the herd now surviving, to its former fine form and numbers!

It should be distinctly and firmly held in mind that this killing "section 11" of that bill was drawn so that the killing should be continued on



THE DESOLATE HAULING GROUNDS OF THE FUR-SEAL AT ENGLISH BAY: ST. PAUL'S ISLAND, PRIBYLOV GROUP: BERING SEA.

In 1872 this field of view was covered with tens of thousands of bachelor seals. During the breeding season of 1872 there never was a day between the 20th of June and the 20th of October in which this field did not contain from 150,000 to 350,000 bachelor seals. In 1890 never more than 5,000 bachelor seals ever were seen upon it at any one time; and during the season of 1909 there never were more than 500 young male seals.

the islands, just as it has been so done during the last ten or twelve years, to the great *and unlawful injury* of that life so destroyed. It was the intention of the framer of this bill that it should be put through without any amendment of Sec. 11. A report upon it was written by the officers of the Department of Commerce and Labor for Mr. Sulzer who, on Feb. 3, 1912, presented this bill to the House and also that report, *H. R. No. 295* to accompany *H. R. 16571*.

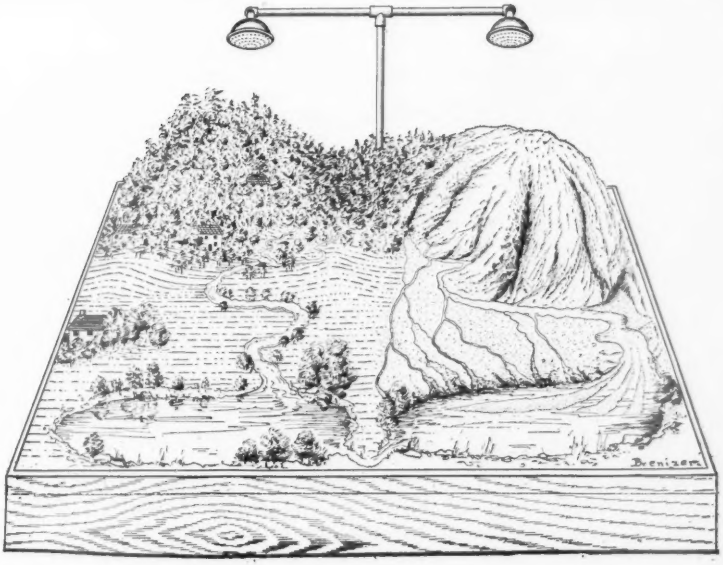
Not a hint was given of any minority objection to it in that Committee's report, and on Feb. 7, 1912, an attempt was made to "railroad" it through the House as an "urgent measure, unanimously reported to the House." Only by accident did one of the members of the Committee learn what was being read at the Clerk's desk in time to prevent this action and throw the bill over to the next week. On Feb. 14 it was amended so as to order a close time of one year, and then passed over to the Senate for final consideration.

In the Senate Committee on Foreign Relations, on March 22d, 1912, this "one year close time" was amended so as to give the herd ten years of rest; and this bill was so reported and placed on the Calendar. The Senate Foreign Relations Committee carefully reviewed the whole history of this treaty as it had been ratified July 7-24, 1911, and found that it was the same one which I had drawn for John Hay in 1905 and that it carried a distinct order for a close time on the islands of "10 or 12 years" from the date of its acceptance. The conditions demanding a close time in 1905 were not as imperative as they were in 1911, and there was no logic in the arguments used by Nagel's "scientists" against it. Doctors Jordan, Stejneger, Merriam, Lucas and Townsend all declared that if these young male seals were not annually killed off to leave not more than 5% of their normal number, they would grow up to fight so savagely among themselves on the breeding grounds that they would greatly injure the prosperity of the herd. One advocate recorded the opinion that in fifteen years' time the species would exterminate itself!

When this Senate Committee had finally perfected the House bill, and it was placed on the Senate Calendar, March 22, 1912, then the opponents tried to so delay the consideration of it in the Senate that it would not be brought up until the last hour of the session, with adjournment close at hand. Then the plan was to try and force the House bill on the Senate as the only one which could be agreed upon. This failing, they were to let the bill die in conference, and rush through in lieu of a joint resolution paying the $400,000 "advance" money ordered by the treaty, leaving the treaty in effect, and permitting the killing on the islands.

This scheme was recognized in time by several wise Senators, and very soon it became evident that the scheme proposed would fail to work. It did not work. The bill was called up and put through August 15, 1912, just as the Senate Committee had reported it, with the full ten years close time amendment. In conference with the House a compromise was fixed at five years as a "close time," and in that form the bill passed both Houses on August 19, 1912.

Thus was the fur seal industry finally fought for and saved to the nation. Now when that herd is surveyed, five years hence, by a competent authority, the condition of it will be known. If it is wise to resume killing, or not, it will be apparent, and the facts will govern action in the premises.



A WORKING EROSION MODEL FOR SCHOOLS

By Don Carlos Ellis

A WORKING model showing the processes of erosion on deforested slopes has been a feature of exhibits made by the Forest Service at recent expositions. It shows the working out of the natural phenomena so well, and is so simple and inexpensive to construct, that a description is here given of a similar model which might be erected in schools for the use of classes in nature study, elementary agriculture, and physical geography.

The model consists of two hills sloping down into two valleys through which two streams wind in and out through farm land and lead into two lakes at the front of the landscape. (Fig. 1.) Both hills are made of the same kind of soil, that of the region in which the model is erected, but one is covered thickly with twigs, young trees, or shrubs, to simulate a forest, underneath which is a heavy carpet of moss representing the layer of leaves and twigs which covers the ground in the real forest, while the other hill is bare of all vegetation.

By means of a suitable sprinkling device water in the form of rain is made to fall with equal force upon the two hills. On the forested slope its fall is broken by the foliage and it drops gently upon the moss-covered surface of the ground. The moss and the soil beneath, which is kept soft and porous by the protective cover, quickly absorb the rain and allow it to seep out as clear water farther down the slope, thus forming a mountain stream which flows through a green and fertile valley into a clear lake at the lower end of the model.

On the other slope the rain beating down upon the unprotected and hardened surface washes deep gullies in the hillside, carries the soil into the turbid stream which drains the valley below, and thence into a muddy lake. The erosion on the slope loosens stones, which are carried down upon the valley farms; the silt deposited in the channel

of the stream diverts the water, which opens up gullies through the dry land; the main stream is made shallower and wider and often overflows into the fields; islands and silt bars rise in the stream; and deltas are built up in characteristic form at the entrance to the lake.

The erosion processes which work themselves out in this model, the wearing down of the hill, the silting up of the stream bed, the gradual shifting of the course of the stream, the formation of deltas and sand bars in the lake, and the gradual opening up of watercourses through them are all typical of the processes constantly going on in nature and show strikingly the close relationship between forests and surface formation. It is the same process of erosion on a larger scale which, after the destruction of our forests, causes the removal of the top soil from our slopes, cuts them up into gullies, and deposits sand and gravel upon the fertile alluvial soil of the bottom lands, in storage reservoirs, or in the channels of streams, where it impedes navigation and causes overflow.

While the model is not intended primarily to show more than the erosion processes, it can be used to show also that a forest-covered slope acts as a reservoir in impounding the water and allowing it to seep slowly into the streams, and, on the other hand, that water runs off the surface of a bare slope as soon as it falls, resulting in floods when the precipitation is heavy and in droughts during a dry season. If the sprinkler is stopped and all the water taken out of both of the streams and the lakes, the lake on the forested side will, within a few hours, receive a considerable amount of water as seepage from the wooded hillside, while the other lake will remain practically empty.

HIGHER PRICES WILL CONSERVE FORESTS

By N. P. Wheeler

HIGHER prices for standing timber and its products will tend to conserve the forests. When timber is cheap it is wasted; for, when cut, it is not worked up, nearly as close as when more valuable. I am confident there has been more timber burned up and destroyed in the State of Pennsylvania than has been manufactured. I have seen 8 or 10 acres of the finest white and red oak girdled just to kill it, so that it could be burned up to clear the land. In fact, that was the common way of clearing the land, the only way of marketing in those days was by manufacturing by water power and seeping down the tributaries of the Allegheny and the Allegheny and Ohio to Cincinnati and Louisville. Only the best of the white pine was taken. The stumps cut breast high and fifteen feet of the bulk of every tree left in the woods and all the tops above the limbs. Not to exceed 50% of the selected tree was taken, the rest being left to rot. No hardwoods could be floated and were therefore not considered valuable. I have seen white pine girdled to kill it to clear the land. Once when our rafts were lying by for high water in the Ohio a larger mass of fence rails brought down by the high water collected behind the rafts. To my surprise I found these fence rails were the finest of black walnut. When the tanneries first came up into Western Pennsylvania hemlock was cut just for the bark, and thousands of acres after the bark was taken off were left to rot or burn. Now that hemlock has become valuable, it is all gathered up that will make lumber. In many places the limbs, tops and branches are gathered up for pulpwood and not enough left to make a bad fire, thereby protecting and conserving the forest. When blackened over by fire it cannot be used for pulpwood. These are some of the reasons why I am confident higher prices will tend to conserve the forests.

A NEW PROCESS FOR THE PROTECTION AND PRESERVATION OF STANDING TELEGRAPH AND TELEPHONE POLES

By E. A. Sterling

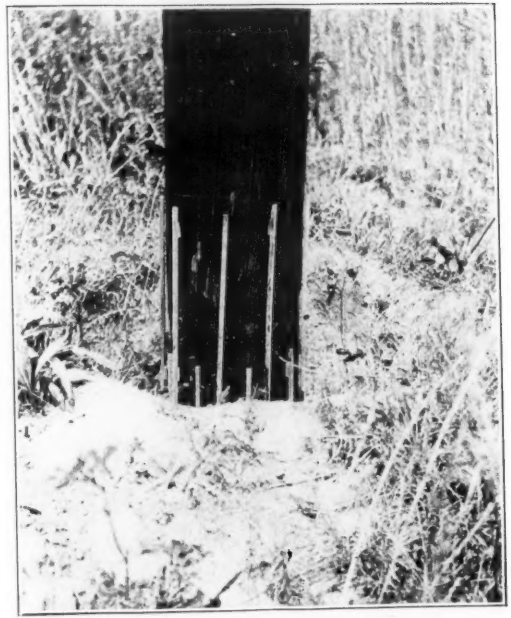
MODERN methods of transportation and communication have caused such a drain on the timber resources of the country that high prices and an ultimate exhaustion of certain species grades will be the inevitable result. The use of wood is universal everywhere, but nowhere is it more strikingly shown than in the enormous number of poles which dot the landscape everywhere, their most general use being for telegraph, telephone, trolley, and electric transmission lines.

The pole lines in the United States approximate eight hundred thousand miles in length, and the number of poles in actual service is not less than thirty-two million. The annual consumption for renewals and new lines amounts to nearly four million poles, or nearly five poles per mile per annum, the actual figures for 1910 being 3,870,694. The extent of the drain on the forests which this represents may be judged from the fact that a perfectly stocked German forest produces only 250 trees per acre, so that on this basis the poles now standing would represent all of the timber growing on over 130,000 acres. Actually in this country, considerably less than one hundred poles are cut per acre, so that for the poles now in use forest areas aggregating nearly half a million acres have been cut over, and to furnish the poles for renewals some 50,000 additional acres are cut over each year, or at the rate of over 100 acres per day.

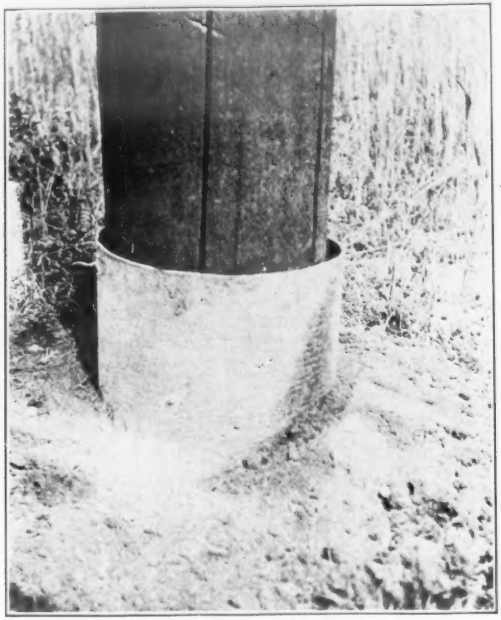
Cedar furnished the material for nearly 63% of the poles renewed in 1910; while chestnut, although available only in a limited territory, ranked second with 17%. The supply of cedar is distinctly limited and will soon be exhausted, while the wide prevalence of the chestnut bark disease threatens to remove this species from the market within a few years. The maintenance of a cedar pole supply by new growth is not even a remote probability, because of the slow growth of the species. A report of the National Electric Light Association states that thirty-foot cedar poles lasting 14 years have taken about 190 years to reach that size, thus it would require 13 growing cedars to continue in service one 30-foot cedar pole. To maintain one 30-foot chestnut pole, even in a healthy growth unaffected by the blight, would require four growing trees. These facts indicate clearly the necessity of preserving the poles now in use as well as those used for current renewals.

The available statistics indicate an average life per pole of from 13 1-2 years for cedars to 6 1-2 years for pine; the general average based on present renewals being about ten years. A report of the German government shows an average life of only 7.7 years on 153,626 untreated poles under observation. Until recently practically all poles in this country were used in their natural state, and great waste has been occasioned by their rapid decay where in contact with the ground. The U. S. Forest Service estimates that, for poles, 95% are destroyed by decay, 4% by insects and 1% by mechanical abrasion. In 1910, 825,000, or nearly 25%, received preservative treatment either before or after purchase, and this should lengthen their life from 50 to 100 per cent. While the treatment of a pole before it is set is advantageous, it adds very materially to the initial cost and will not check the increasing consumption until a greater per cent are treated,

EXCAVATION AROUND POLE AND SOFT DECAY SCRAPED AWAY.



SPACING RODS IN PLACE.



THE FORM IN PLACE.

POURING THE FILLER INTO THE FORM.

or until the majority now in place have been removed. A more immediate saving, and one which would save the cost of the poles as well as the expense of resetting them, would be a treatment which could be applied successfully to the millions of poles now in place.

The conditions under which poles are used vary so greatly that an average cost figure for pole renewals is difficult to determine. Generally speaking, the cost may vary from $1 to $2 per pole for country telephone lines to $100 or more for the high poles in city streets. The initial cost of the pole varies from $1.80 for a 25-foot cedar pole to $16.21 for a 60-foot pole of the same, or $17.08 for a chestnut pole of the same length, to which must be added the labor of setting, restringing wires, accessories, etc. A fair average for a commercial line along railroads or through country districts, with three to five cross-arms, would be about $10 per pole, including all items. This would mean that the poles now in use in the country represent a value of $320,000,000, and that the annual renewals cost in the neighborhood of $40,000,000. It is obvious that any treatment which can be applied to the standing poles, and which will increase the life of those now in use even a few years, will result in an enormous saving.

Practically all poles fail at the ground line because of decay, and on account of this weakening at the base have to be replaced or cut off and reset, while the top portion is still sound. This decay is caused by wood-destroying fungi which have a definite origin and develop under the same fixed laws of growth that govern the higher forms of vegetable life. Fungus growth has its origin in microscopic spores which are comparable to the seeds of plants, and as they are present nearly everywhere, it merely remains for them to find favorable conditions under which to germinate and develop the microscopic threads which permeate the tissues of the wood and destroy its texture. The fundamental factors necessary for the growth of fungi are moisture, air, and a certain degree of warmth.

These conditions are found in favorable combination at the ground line of poles, where the moisture from the earth keeps the surface of the wood moist, and where, just underneath the surface, the soil maintains, except during the winter season, a sufficient degree of warmth for the fungi to develop. It follows, therefore, that the decay of poles appears from a few inches above the ground line to a distance of a foot or more beneath, the air being more or less excluded at the basal portion of a pole; while above the ground line, under ordinary conditions, insufficient moisture is present for the rapid development of decay.

Despite the clearly defined factors which cause the decay of poles at the ground line, and the annual renewal of millions of poles still sound at the top, no definite steps have been taken until recently to reduce or prevent this waste of timber. There has recently been devised by an old gentleman living in New Jersey a plan which promises to materially reduce the consumption of poles and greatly increase the life of those now standing. If it succeeds it will be another step in the reduction of the drain on our forest resources.

What is now known as the Lamb pole treatment first renders innocuous the decay which has already started, and then seals the ground line portion of the pole with an impervious preservative coating, which prevents the evaporation of the preservative previously applied and prevents further decay by entirely eliminating air and moisture.

The whole process is simple and inexpensive, and consists of first removing the dirt around the base of the pole to a depth of two to two and a half feet, and scraping or cutting off the decayed portions of the wood. A hot brush treatment of coal tar creosote is then applied liberally, which kills the living organisms of decay and penetrates the outer tissues of the wood. A fire-proof casing is then placed around the pole, the upper portion extending about six inches above the ground line and the lower portion from eighteen inches to two feet below, mak-

ing a total length of from two to two and one-half feet. This casing is held out from the pole by spacing rods which leave about a half inch opening between the pole and the casing at the solid portions and a greater space where decay has existed.

After the casing is in place, the dirt is tamped in at the bottom up to the base of the casing, and inside of the form is poured a hot preparation of pitch which will yield a distillate of high boiling and high gravity creosote oil. The pitch, after it hardens, will form a perfect bond with the creosoted surface of the wood and entirely prevent the entrance of air, moisture, or other agencies favorable to decay, and at the same time prevent the evaporation of the creosote which was applied by brush treatment to the decayed surface. The creosote in the pitch acts as an additional toxic agent in destroying and preventing all forms of decay. Experiments have shown that this pitch filler will not only form a perfect bond with the wood and remain in absolutely close contact in all climatic changes, but it also entirely fills all surface checks and, to a slight degree, penetrates the wood. After the pitch has been poured in and has cooled, the dirt is thrown back around the pole and tamped tight and a protective fireproof covering or cap of cement is applied; or, if the filler is poured to within only about two inches of the top, the edges of the fireproof casing can be bent over and tacked to the pole, thus eliminating the use of a cement cap.

The cost of the Lamb pole protective treatment is but a fraction of the cost of putting in a new pole, and under average conditions one year's increase in the life of a pole will pay for the treatment. The average pole has a life of about ten years, and the cost of replacement is averaged at $10, hence the annual charge on a 4 per cent compound interest basis amounts to about $1.25 per pole. If properly treated at the ground line a conservative estimate places the increase in life at from 5 to 10 years. To double the life of poles would mean a saving of 2,000,000 poles per year, which is equivalent to the pole timber on at least 25,000 acres of heavily stocked forest.

FINISHED POLE ON SLOPE.

FALL CREEK THREE MILES EAST OF ITHACA. THE PROPOSED DAM WILL BE CONSTRUCTED AT THE LOCATION INDICATED BY THE TWO ARROWS. YOUNG WHITE PINES IN FOREGROUND ARE THE RESULT OF NATURAL SEEDING FROM NEIGHBORING TREES.

FOREST PLANTING AT CORNELL UNIVERSITY

By JOHN BENTLEY, JR.

(*Assistant Professor, Department of Forestry, New York State College of Agriculture at Cornell University.*)

THE needs of a big University are many and far-reaching; and when that University is still growing and enlarging its sphere of usefulness year by year, it becomes necessary to look far into the future and anticipate future needs by wise and prompt action in the present. Cornell University has developed so rapidly in the last few years, and in particular, the work of the Agricultural College has increased and broadened so much, that it is almost impossible to keep the equipment up to the demands forced upon it. Among the projects which the University has in mind to meet the increasing demands is the building of a large reservoir, on Fall Creek, for the purpose of storing up water enough to supply the needs for power, light, and domestic uses. Dependence is now placed on Fall Creek, which carries enough water at certain times of the year; but there are times in the summer, and especially in dry seasons, when the amount of water in the creek is inadequate. It has therefore become necessary to make provision for an increased supply. This, it was found upon investigation, could be done to best advantage by impounding sufficient water at a convenient place to make possible an increased flow in the stream at times of low water, or at any other time when the need might arise.

Fortunately, a good natural reservoir site existed on Fall Creek about three miles east of the University. At this point in its course, the stream has cut through one of the numerous ridges which are a common topographical feature of this part of the country; a dam placed at this cut would flood a large area up stream, and impound a

large amount of water. Here, then, was a solution to the problem, "More water." The land, including the reservoir-site, together with a considerable area immediately surrounding it, has been acquired by the University during the past two or three years, and plans are now under way for the construction of a dam and the preparation of the site for a large reservoir.

The dam will be constructed to a height of fifty feet and this will cause the stream to flood an area of approximately 220 acres. The depth of the water will vary, but over an extensive part of the area it will average 25 feet. The capacity of the reservoir, when full, will be one hundred and fifty million cubic feet. No power plant will be installed at the reservoir, nor will there be any transmission-line; the object of the development is simply to make possible an increased flow of water from time to time as necessity requires, for the proper operation of the present power-plant which is situated near the University and about two miles below the reservoir-site, on Fall Creek.

At the time the land was acquired it became necessary to purchase considerable land which was not actually needed, either because the owners did not care to divide their property, or because the properties were so situated that division would be impracticable. It therefore happens that there is an area of approximately one hundred and eighty acres which borders the reservoir site, and which will be above the high water line after the dam has been built and the reservoir filled. The question immediately arose: What shall be done with this land above the high water line? It was considered inadvisable for several reasons to have tenants occupying those portions of the farms that would be left above the high water line, and it also seemed impracticable to maintain the land in a state of cultivation. It was, therefore, proposed to reforest such portions of it as were not already occupied by trees, and establish an unbroken forest cover which would serve a double purpose. Not only would erosion be checked, but the University would have, in process of growth, a stand of timber which will

LOOKING OVER LAND THAT WILL BE FLOODED. THE FARM BUILDINGS IN THE PHOTOGRAPH WILL BE TORN DOWN AND REMOVED BECAUSE THEY ARE BELOW THE HIGH-WATER LEVEL OF THE PROPOSED RESERVOIR.

GENERAL CHARACTER OF THE LAND TO BE RE-FORESTED. A GROWTH OF TREES AND SHRUBS IS ALREADY PRESENT ON STEEP BANKS AND ALONG OLD FENCE LINES.

some day be of considerable value. The checking of erosion is, of course, of present and permanent value in that it will prevent to a large degree the washing of soil and silt into the reservoir, and the timber will eventually have a very high value, because of the constantly diminishing supply and the resulting increase in timber values. This project, therefore, is another example of the increasingly large number of forest tree plantations which are being established for the purpose of conserving water, preventing destructive floods and erosion, and the ultimate production of timber.

When the plans of the University had progressed this far, the Forestry Department of the New York State College of Agriculture offered to take over the work of establishing the tree plantations on the borders of the reservoir; and this proposition met with such favor that the work was begun this spring. It is expected that the work of tree planting will continue in following years until those portions of the land which are not already occupied by trees will be planted with species of trees suitable to the soil and to the varying conditions which exist on the tract.

The work of the present year consisted in planting twenty thousand trees, mostly white pine, on about eighteen acres of land. The trees were obtained from the New York State Conservation Commission, and fully ninety-five per cent of the trees planted were four-year-old white pines. A small plot is also planted with Scotch pine, western yellow pine and Norway pine, for the purpose of experimentation. That the conditions on this tract are favorable for the growth of white pine is shown by the fact that white pine grows abundantly on the surrounding hills and slopes which have not been cleared in the past for agricultural purposes. Further evidence that the conditions are adapted to the growth of white pine is obtained from the fact that in fields which have not been plowed or cultivated for several years, an advance growth of white pine seedlings is slowly but surely occupying the ground. Figure 1 illustrates some of this advance growth which has sprung up naturally on one of the steeper slopes just at the water line. In several other places a large number of young white pine seedlings, not more than four or five years old, were discovered during the course of the

STUDENTS OF THE NEW YORK STATE AGRICULTURAL COLLEGE AT CORNELL UNIVERSITY PLANTING 4-YEAR-OLD WHITE PINE ON LAND ABOVE HIGH-WATER LINE.

planting, which seems to indicate that the plantation should be successful, even though the soil is in some places a rather heavy clay.

The trees were shipped from the New York State nurseries in the Adirondacks, and reached Ithaca about the 25th of April,—a little late for climatic conditions as they exist in this part of the State, but the best that could be done, considering that the nurseries are situated much further to the north, where the season is at least two weeks later than at Ithaca. They were taken out and heeled in immediately near the planting ground, and the actual work of planting was done during the two succeeding weeks by students in the New York State College of Agriculture, who were taking courses offered in forestry. The students worked in crews of two each, as shown in figures 4 and 5, one man carrying a bucket containing the trees and doing the planting, while the other one preceded him, digging holes for the trees with a mattock. This method was followed on a large part of the area in preference to planting in furrows turned up by the plow, because it was found that the surface soil, immediately under the sod, could be utilized to best advantage when planting in holes with the mattock; whereas much of the best soil was turned up and made unavailable when the plow was used. The trees were spaced approximately six feet apart each way, making about twelve hundred trees to the acre. It is believed that this spacing is close enough, considering the favorable climatic conditions which prevail in this part of the country; and if it is found necessary, on account of losses, to fill up the fail-spots in subsequent years, this can be done at very little extra cost or labor.

The planting was completed on May 11, after two weeks of continuous work, during which the weather was extremely favorable. The days were almost invariably clear and warm, while frequent showers fell at night during the period of planting; and immediately following the work several heavy showers occurred which were sufficient to give the newly planted trees plenty of moisture. In some places the soil was rather wet for ideal planting, but taking everything into

consideration, it was much better to have had the soil moist than dry, especially where the soil was of a clay composition. Counts made on June 14 showed that 99 per cent of the trees were living, and had made a good start on their current year's growth.

The photographs illustrate portions of the tract on which the planting was done. A few old farm buildings will have to be removed, and while a part of the land is good for agricultural purposes, it is of first importance that the borders of the reservoir be protected from washing by rains, and that every precaution be taken to insure a sanitary, permanent ground-cover.

This operation is of interest because it forms a concrete example of the value of tree planting. The planting will continue under the supervision of the department of forestry, and the students for several years to come will thus have an opportunity of doing practical tree planting. In future years the plantation will have an added value because it can be made the subject of detailed study, and it will always serve as a "demonstration plantation" which has as its double object the conservation of water and the production of timber.

THE STUDENTS PLANTING WHITE PINE IN SQUARE-HOLES MADE WITH A MATTOCK.

GEO. R. GREEN AT STATE COLLEGE

Mr. George R. Green, recently Assistant Forester of Ohio, and a graduate of the University of Michigan, under Dr. Roth, of the class of 1910, *has been appointed an instructor in the department of forestry at the Pennsylvania State College.*

LUMBERMEN AND FORESTERS CO-OPERATE

COMMITTEES OF EXPERTS TO INVESTIGATE MATTERS OF VITAL IMPORTANCE TO ALL FOREST AND TIMBER INTERESTS IN THE ENDEAVOR TO SECURE PRACTICAL RESULTS.

LUMBERMEN, timberland owners, representatives of fire protection associations, State foresters and delegates of the American Forestry Association held meetings during the Fourth Conservation Congress at Indianapolis on Oct. 1, 2, 3 and 4, which resulted in developments of the utmost importance to all concerned and the interests which they represented. The outcome of the conferences will be, it is expected, the reduction, to a practical working basis, of various theories, plans, experiences and proposals, regarding matters of vital concern to cutters, owners and preservers of the forests of the United States.

It was decided, following two or three sessions each day, at which the subject was discussed from all standpoints, that committees are to be appointed to make a thorough investigation of questions such as the timberland taxation problem, top lopping, replanting, reforestation, fire protection publicity, etc., as the main committee may select.

These investigating committees, composed of the most able experts upon the matters about which inquiries are to be made, will, by the time the next Conservation Congress is held in 1913, be able to report as their finding, it is hoped, definite conclusions which will be reported and discussed, according to present plans, at one whole day's session of the Congress devoted to that purpose.

In the meantime AMERICAN FORESTRY is to keep all who are interested informed of the progress the committees are able to report from time to time.

It has for some time been evident that the handling of forestry and lumbering matters in a practical constructive way by the real workers, and the crystallization of loose agitation into sound and definite policies would be of the greatest possible benefit to all who are interested in the proper cutting and the conservation of the forests, and it was with this object in view that the sessions, for the discussion of ways and means to bring it about, were held.

The American Forestry Association, as the national organization for the conservation of the forests, is to take general charge of the work. A committee consisting of Capt. J. B. White, the retiring president of the Fourth Conservation Congress, and one of the leading lumbermen of the United States, E. T. Allen, forester for the Western Forestry and Conservation Association, and one of the foremost workers for forest conservation in the country, and Chief forester Henry S. Graves of the Forest Service, are to confer with the executive committee of the American Forestry Association in the selection of the committees and the questions to be investigated. This is to be done within a very short time and the important work will be well under way, it is anticipated, before the new year.

Mr. E. T. Allen presided at the conferences, and at the outset spoke of the necessity of getting together for practical work. There followed several sessions at which plans were discussed, and at the same time many of those present gave their views on the taxation question, various plans for the protection of the forests from fire, methods of fire protection, publicity as an aid to this protection, and for increasing the strength of forestry organizations, and much that was of practical value was learned. Among the speakers were E. T. Allen, Everett G. Griggs, I. C. Williams, John M. Woods, F. W. Rane, N. P. Wheeler, R. D. Swales, Wm. Irvine, Geo. E. Watson, T. B. Wyman, H. P. Baker, F. W. Besley, F. A. Elliott, George K. Smith, Henry E. Hardtner, Leonard Bronson, J. L. Scott, D. P.

Simmons, delegates Charles Lathrop Pack, E. A. Sterling, Col. W. R. Brown, Dr. H. S. Drinker and P. S. Ridsdale of the American Forestry Association, and a number of others.

Following these discussions a committee consisting of Messrs. Drinker, Besley, Simmons, Hardtner and Ridsdale presented resolutions to the Conservation Congress of which the following were adopted:

"Believing that the necessity of preserving our forests and forest industries is so generally realized that it calls only for constructive support along specific lines:

"We recommend the work of the Federal Forest Service, and urge our constituent bodies and all citizens to insist upon more adequate appropriations for this work, and to combat any attempt to break down the integrity of the national forest system by reductions in area or transfer to State authority.

"Since Federal cooperation under the Weeks law is stimulating better forest protection by the States, and since the appropriation for such cooperative work is nearly exhausted, we urge appropriation by Congress for its continuance.

"We recommend that the Federal troops be made systematically available for emergency service in controlling forest fires.

"Deploring the lack of uniform State activity in forest work we emphatically urge the crystallization of effort in the lagging States toward securing the creation of forest departments with definite and ample appropriations, in no case of less than $10,000 per annum, to enable the organization of forest fire work, publicity propaganda, surveys of forest resources and general investigations upon which to base the earliest possible development of perfected and liberally financed forest policies.

"We recommend in all States more liberal appropriation for forest fire prevention, especially for patrol to obviate expenditure for fighting neglected fires, and the expenditure of such effort in the closest possible cooperation with Federal and private protective agencies; and also urge such special legislation and appropriation as may be necessary to stamp out insect and fungous attacks which threaten to spread to other States. We cite for emulation the expenditure by Pennsylvania of $275,000 to combat the chestnut blight, and the large appropriation by Massachusetts to control insect depredation, and urge greater congressional appropriation for similar work by the Bureau of Entomology.

"Holding that conservative forest management and reforestation by private owners are very generally discouraged or prevented by our methods of forest taxation, we recommend State legislation to secure the most moderate taxation of forest land consistent with justice and the taxation of the forest crop upon such land only when the crop is harvested and returns revenue wherewith to pay the tax.

"We appreciate the increasing support of lumbermen of forestry reforms and suggest particularly to forest owners the study and emulation of the many cooperative patrol associations which are doing extensive and efficient forest fire work and also securing closer relations between private, State and Federal forest agencies. Believing that lumbermen and public have a common object in perpetuating the use of forests, we indorse every means of bringing them together in mutual aid and confidence to this end."

During the sessions a paper by Chief Forester Henry S. Graves, who was unable to be present, was read. A portion of it appears in another section of this issue.

At the Friday session of the Congress Major Everett G. Griggs, president of the National Lumber Manufacturers Association, read a paper in which he criticised the manner in which choice timberlands have been exchanged and defended the association of which he is president, declaring the body is not an unlawful combination of manufacturers. He declared the greatest development in forest conservation and fire prevention originated in such associations, and that the principal theories advocated by conservationists are upper-

most in the minds of members of the associations. Major Griggs urged that consumers of lumber use odd and short lengths as one means of conservation. He said the low grades of lumber, slabs and waste from a mill must bring enough money when sold to pay for the labor expended in saving them and that with rising values of timber and utilization of lower grades of lumber, the product of the entire tree will be saved. He also advocated workmen's compensation laws and pointed out the good and bad features of the compensation law which now exists in Washington.

E. T. Allen, forester of the Western Forestry and Conservation Association, spoke on "Conservation Redefined." Among other things he said:

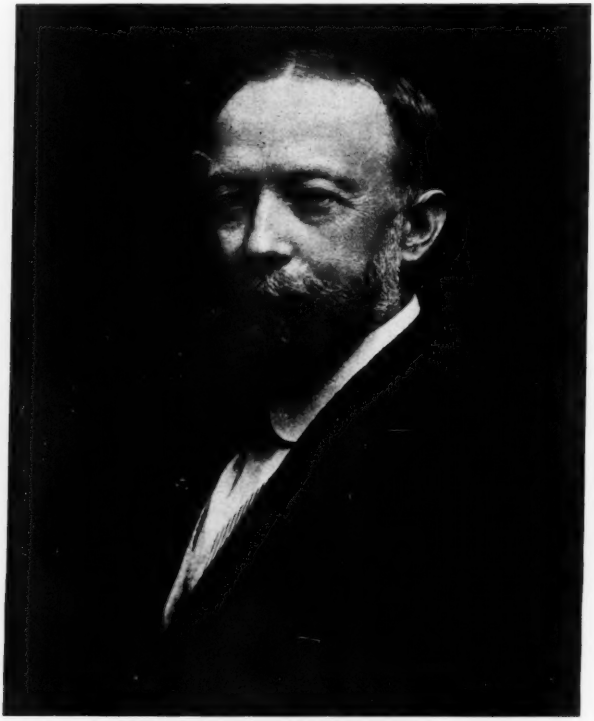
> What our forests need most is more patrolmen; more trails and telephones; more funds and organization to marshal the fire-fighting crews when required; better fire laws and courts that will enforce them; public appreciation that forest fire departments are as necessary as city fire departments; more consideration for life and property by the fool that is careless with match and spark; realization by more lumbermen that it pays in more ways than one to do their part; State officials who will handle State laws intelligently; tax laws that will permit good private management; consumers who will take closely utilized products. A few other things need specific study and action.
>
> Do not think me lacking in ideals when I say that our greatest need is vigor and skill in appealing to human selfishness. The altruist comes to us unsought. But to reach the hand with the torch, the vote withheld, the word unspoken, we must find the man, make him listen, and show the cost of forest destruction to his particular home and pocketbook.

Capt. J. B. White, the president of the Congress, in his address spoke of the meaning of conservation to lumbermen and said:

> "We must protect our forests by preventing forest fires. Government and State appropriations must be made sufficient for this purpose. In the report of the Conservation Commission to the President it is stated that fifty million acres are burned over annually, and since 1870 there has been lost each year an average of 50 lives and $50,000,000 worth of timber. The lumbermen's interests are to prevent fires and to stop waste; and they are anxious to co-operate with the State and with associations for this purpose, and are already doing so in many places. The true, saving features of forestry are becoming better understood, and better applied; and we will save our forests, and will grow trees wherever necessary and profitable, the same as any other crop; and there will be no timber famine in the near or distant future."

On Friday evening after the adjournment of the Congress the Indiana Lumbermen's Association tendered a banquet to the visiting lumbermen and foresters at which Capt. J. B. White was the guest of honor.

The Congress elected as its new president Mr. Charles Lathrop Pack, of Lakewood, N. J., who is a director of the American Forestry Association. Mr. Pack is the owner of extensive timber lands and is one of the best informed men on forest conservation in the United States, and he has for many years taken a deep interest in the work of the Conservation Congress and of the American Forestry Association. It is believed that Mr. Pack and the executive committee of the Congress will be willing to set aside one day of the next Congress for consideration of the reports which are to be made by the committees soon to be appointed to investigate the matters in which the lumbermen and foresters are so greatly interested.



CHARLES LATHROP PACK,
President of the Conservation Congress, elected Oct. 4, 1912. He is also a director of the American Forestry Association.

MR. CHARLES LATHROP PACK

President, National Conservation Congress

MR. CHARLES LATHROP PACK'S interest in affairs has been broad and constructive. He is an active and busy business man, who finds time for public usefulness. As a resident of Cleveland, Ohio, he has held various positions of trust. As president of the Cleveland Chamber of Commerce, he was one of the small and active group of men whose work made effective progress for a greater and better Cleveland.

For many years, Mr. Pack has been a trustee of Western Reserve University of Cleveland, where in civic work as well as in business, he had as an associate Dr. H. A. Garfield, now president of Williams College.

He is well known as an authority on economic forestry matters, and was one of the first Americans to study Forestry in Germany. After his return from Germany, he explored in the pine regions of Canada and in the South. It was at about this time that he was paid a fee (large in those days) by the late Jay Gould for expert forestry advice; and this is the earliest record of such a fee being paid in the United States.

Mr. Pack has since then devoted himself chiefly to the lumber industry,

which is his first and always leading business. He now holds large tracts of standing pine timber, and is considered one of the leading authorities on timber and general forestry in the United States. He has also made a distinct success in the banking business, the Cleveland Trust Company having been organized in his office and he having been always one of its directors. He is also a director of the Seaboard National Bank of New York City.

His interest in sound money led him years ago to take a prominent part in the sound money movement, and he was the youngest member of the Indianapolis National Monetary Commission.

When the first Conference of the Governors of all the States took place at the White House, during Mr. Roosevelt's administration, Mr. Pack was invited by President Roosevelt as one of the experts on the subject of Conservation. Later, the President made him one of the National Conservation Commissioners. With Mr. Gifford Pinchot, his close friend, and Dr. Eliot, of Harvard College, and a few others, he organized the National Conservation Association.

Mr. Pack is a life member and a director of the American Forestry Association, and he has been very active in the movement that has during the past two years widened the field of work of the Association and increased its usefulness. He has delivered addresses on Forest Conservation and Taxation before the American Civic Association and other bodies. His work for Conservation is widely and well known, and he has been closely allied with the Conservation movement from the first. His interest is constructive and economic rather than political, and he has refused more than one attractive political office.

But he is not only interested in the conservation of material resources, but also in those things that make for more equal opportunity, and for the conservation of human life. His unique gift to one of the New England colleges for the purpose of providing an annual sum for the improvement of the quality of the milk, butter and bread consumed by students is an example of the practical turn of his mind in that direction.

Mr. Pack was for seven years an active member of the Cleveland City Troop, later called Troop A, of Ohio, and retains as a veteran member his connection with that crack organization, which holds the record for efficiency in the Cavalry of the National Guard.

As a young boy, he lived in the pine woods of Michigan, where he was born May 7, 1857, and later grew to manhood in Cleveland, Ohio. The Packs emigrated from England, and were in Colonial days a New Jersey family; and Mr. Pack, some years since, returned to the State, making his home at Lakewood. He is a member of New Jersey Forest Park Commission.

At the recent meeting of the National Conservation Congress at Indianapolis, Mr. Pack was elected president of the Conservation Congress for the next year—a signal honor richly deserved because of his training, his prominence in the Conservation movement and his long-continued and consistent service. He has been a prominent figure at former congresses, and is keenly alive to their usefulness, principles and possibilities. The Fifth American Conservation Congress is to be congratulated upon its choice of a president. He will undoubtedly do much to increase the usefulness of the organization and to broaden the field of its endeavor.

IN THE HILLS OF OREGON

By J. Albert Baker

Cascade National Forest

IT is a hot day in August. Come take a trip to our friend's homestead in the hills, where the strenuousness of city life is unknown. Is this not a beautiful scene to be reached by a few hours of travel? The horses are weary, so let us ride slowly and enjoy the pleasures of a summer evening in the woods.

At our feet, the unforked wagon road winds its tortuous way along the bank of a brawling mountain stream. The gigantic mast-like firs cast long shadows opposite the rays of the setting sun. No sound is heard save the muffled foot-falls of our slowly moving steeds, the rustle of a bird in the wayside hazel, and the drowsy murmur, coming from the creek far below, of the water as it slips into the deep, cool pool where the Dolly Vardens love to rendezvous. The evening breeze is just starting down stream bringing sweet odors of balsam and pine to our nostrils, so long accustomed to the city's dust.

But what is that smell which brings memories of long past log-rolling days on the farm? Is some one desecrating the sabbath peace of this evening by burning brush? What causes such a cloud of smoke to meet us as we round this protruding hill? Surely a settler's slashing fire would not create so impenetrable a mask over these sylvan beauties!

The shadows of evening have given way to darkness as we enter a deeply wooded stretch of creek bottom. The smoke effectually hides all stars, increasing the gloom until we can no longer see our horses' ears, and must feel to find the saddle-horn. But see that lurid patch far up the road where the timber ceases! A little nearer we come and a whole city seems to be ablaze. In the foreground, the deserted buildings of an abandoned logging camp cluster near the dense timber, in its gloom, like a brood of young chicks trying to escape the unwonted light.

A few more yards and we are in a logged-over area flooded with light shed by a huge forest fire, which is moving upstream. Here we see the battle-ground strewn with smoldering ruins, as though a devastating army had destroyed a city by the torch. Yonder hill topped with great hollow snags which are belching forth columns of blazing wrath, marks the advance of the fire, where the battle is being waged most fiercely. A huge glare lights up the heavens, disclosing immovable, dark mountains to the right and to the left of the narrow valley, while the crash of falling trees, and the dull thud of their impact with the earth, recalls the days of the logging camp, when the "fallers" were busy. But here is our homesteader's cabin, set in the green oasis of a clover field, safely escaping the ravaging flames. Here we can rest for the night, disturbed only by the distant boom of the falling tree trunks, and the glare of the receding fire.

A few hours of slumber and we are aroused by the clank of shovels and mattocks being thrown to the ground. Savory odors come up from the "lean-to" at the rear of the cabin. We hurry down to find a scene similar to that common in the mess hall of a military station. Around improvised long tables men are seated, washing down hot-cakes and bacon with black coffee, while outside a cavalcade of tired, grimy men just in from an all-night of labor on the fire line, are stretching themselves on their tarpaulins, for rest.

But where is the forest fire? Only an occasional thud is heard as some

unlucky monster crashes down the mountain side; no blaze can be seen save that of the sun which, with dimmed brightness, is trying to pierce the pall of cold smoke. Why is the Forest Ranger so busy instructing his subalterns—the foremen—to take their squads to certain strategic points and renew the attack on an enemy which seems dead?

Let us go with the Ranger as he surveys the field, and disposes his forces where they can best wage the battle. A closer examination of the fire-line shows that the enemy is not dead but only resting and preparing to take up the fight when the time is more opportune for its successful forward march. Observe that line of smoke near the ground, creeping stealthily up the hill, eating its way through decayed vegetation, and occasionally sending a sentinel blaze up a pitchy pine tree to spy on the laborers. Let us stay and watch this wary destroyer, as it gains confidence from the heat of mid-day, hop up into a clump of manzanita brush and crackle with delight.

Just in front of it, the hobo, pressed into service, wields a mattock by the side of a white-handed salesman, who had come to the wilds for a fishing trip. A little farther is the stalwart woodsman, with muscles of iron, swinging one end of a cross-cut saw, while at the other end, the bare head of a college man is in evidence. Why are these men toiling so diligently to construct a trench and clear out an alley in the underbrush?

Hear that roar down the hill! The hot winds from the valley are scurrying to the cool deep woods; the blaze in the manzanita, with a crash through the greasewood, leaps to the canopy-like tops of the conifers and makes for the ridge in leaps and bounds. It comes with a shriek and a crash. Great walls of flame consume the undergrowth and set fire to the dead snags and green timber alike. Clouds of sparks, blown from the snags by a fierce gale, soar high into the air. On every hand new fires are springing up. The men work like demons, but to no avail. With an impetuous rush, the blazing whirlwind crosses their trench, and they must drop back.

Do they give up the battle as lost? Follow them through the night, as led by the Ranger and strengthened by the night crew, they encircle the fire with a new trench after it has become quiet in the evening. Here the enemy is combatted with his own weapon, when a back-fire started from the new trench meets the main advance, leaving nothing for it to burn. However, the task is not yet done, the victory is not yet won, for the days are hot and the air full of smoke and cinders, emitted from smoldering wooden smoke-stacks that are watching for an opportunity to hurl their incendiary pillagers into the virgin timber, and start afresh the path of devastation. By day and by night the men, with vigilant eye, patrol the firing line keeping the enemy at bay, while day by day the atmosphere grows more like that of the Stygian pit, so that life becomes a horrible nightmare of heat, smoke, burns and toil.

But listen! Whence comes that long, low rumble? Such a rumble as is heard when an enormous herd of cattle is approaching, on the plains. Note how the smoke to the southeast has given way to a dark, lowering cloud. At sight of this, the men drop their tools and make a dash for the lower, open country, hurried on by a cool, damp wind which increases to hurricane speed by the time they reach the clearing. Here the scattered trees groan and hiss as their umbrella tops sweep toward the ground; while from the uncut hill sides comes a tumult as of a storm at sea, drowning all other sounds save the crash of trees, weakened by fire, dashing to the earth with a jolt. The smoke is quickly pushed downstream followed by a sheet of rain which sounds so cool and refreshing as it falls on the shake roof of the homesteader's cabin. Such a sound as brings joy and sleep to the exhausted, heavy-eyed men!

THE EFFECT OF ADVANCING VALUES OF LUMBER AND STUMPAGE ON THE CONSERVATION OF OUR FOREST RESOURCES

By Robert Fullerton

THE value and importance we attach to natural resources is based on their abundance and not on the time or labor cost required in their production or reproduction. The one time supposed limitless area of virgin forest lands in the United States seeded by Mother Nature with no human aid and maturing for centuries on the unexplored, untaxed public domain, was considered of little or no value; a sort of elemental inheritance like water and sunshine, often looked upon as an obstructing, expensive embargo in the civilizing progress of the pioneer homesteader when clearing his land for the cultivation and production of necessary food crops. Some modern industrial critics with little knowledge of early pioneer times, or lacking capacity to rightly understand conditions confronting the homesteader and the lumberman in their strenuous efforts to make a living in the wilderness outposts of civilization, accuse these hard working nation builders of thoughtless predatory vandalism and wanton wastefulness of an indespensable natural resource. Going back to colonial times, the abundance of growing timber in New England was often considered a nuisance; a troublesome hardship to be cut down and burned up to clear the land for farming purposes.

A forest of giant oaks or towering pines is a beautiful sight and fills the eye with delight. But our forefathers, while appreciating the beauty and value of their forest resources, could not subsist on a diet of acorns and pine cones, and the obstructing forest trees had to surrender their first lien to the soil and the sunshine to make room for some food producing crop. The American oak had to make way for the Irish potato and the pine and the spruce were deadened and destroyed that corn and wheat might grow. Our forefathers slaughtered their forest trees that mankind might live; a survival of the fittest, that calls for no apology from the generations that preceded us.

The first settlers in this country were poor and proverbial for economy; they wasted nothing that seemed to them of value; they came from countries where timber was scarce and highly prized; to cut magnificent groves of pine and oak trees that had been maturing for centuries, and consign their splendid lumber-making trunks to the flames, must have occasioned a feeling akin to sacrilege in the minds of Puritan pioneer homesteaders. No settler at any time ever cut down valuable timber from a spirit of pure rapacity, and no lumberman ever permitted a single log to rot in the woods, if there was any visible or prospective profit in hauling such logs to his mill and converting them into lumber.

This statement does not imply that farmers have not destroyed and wasted much valuable timber, and that lumbermen have not left millions of logs in the woods to rot and burn up, but in every instance where a farmer destroyed obstructing timber, it was done from absolute necessity, and the lumberman left low grade logs to waste in the woods rather than involve himself and his associates in bankruptcy, as the market price obtainable for lumber made from such logs, was less than the labor cost of its production. Lumbermen who own and operate saw mills are more interested in saving and utilizing their forest resources than any altrustic politicians demanding legislation to compel the American people to

practice economy and avoid waste in the management of their business.

When the individual becomes the owner of any resource, it requires no legislation to compel him to take care of his own. Zealous but impractical advocates of conservation, newspaper and magazine muckrakers, political demagogues and insurgent office-seekers, have in late years joined in a chorus of indignation and condemnation of American lumbermen as predatory robber barons, united in law-defying combinations, branded as undesirable citizens, public enemies wasting and exploiting the people's inheritance of forest resources. Consumers of forest products, childlike in their requirements, want to eat their cake and have it too; demanding cheap lumber which means the rapid slaughter of our lumber-making forest trees. Any concerted limitation of the production of lumber to correspond with the demand is looked upon as a crime, a violation of the Sherman anti-conservation law. The cheapest commodity in the United States today is forest trees, suitable for saw logs, the present price of stumpage, whether it be hard wood or soft wood, is only a fraction of what it would cost if the trees had to be grown like any other soil crop.

Twenty-five or thirty years ago, forest trees in this country had only a nominal value and lumber prices were based on the cost of bringing the logs from the woods to the mill and converting them into lumber, the value of the raw material or stumpage being only a few cents per thousand feet. Under such conditions only the large mature trees easily accessible and of good quality were harvested by lumbermen and all inferior or defective logs were left in the woods to rot or add fuel to recurring forest fires. Good lumber was so cheap that low grades could not be sold for the cost of production and freight charges to points of consumption.

The need or importance of conserving our forest resources received little thought or consideration. Timber lands were cheap and abundant. The magnificent forests of the Pacific Coast States were just being explored, cruised and estimated, revealing a supposed limitless supply of the finest lumber-making trees in the world. The yellow pine of the Southern States was first beginning to attract the attention of northern lumbermen whose stumpage holdings in the white pine forests of Michigan, Wisconsin and Minnesota began to show signs of exhaustion, and a corresponding enhancement in stumpage values. The development of these new forest resources kept lumber cheap. Select timber lands selling at two to five dollars an acre, yielding ten to twenty thousand feet to the acre, made a choice pine or oak tree scaling one thousand feet worth less than fifty cents.

Contrast the nominal value placed on this superb forest tree that had been growing and maturing for a hundred or two hundred years, surviving the hazard of devastating cyclones, insect ravages and destructive forest fires, with the cost of such a tree, if planted by the hands of human foresters, the land on which it grew progressively taxed for a hundred years, the capital invested in the forest farm doubling itself every ten years through interest and taxes compounded. Suppose our forest resources were exhausted and the American farmer, forester or lumberman should undertake to grow forest trees for profit, assuming that lands suitable for forest growth could be obtained for $5.00 an acre and, allowing $3.00 an acre for planting and protecting the young trees from fire, he would start with an investment of $8.00 an acre, the first year. In ten years his investment has doubled by the addition of annual taxes and interest charges compounded. At the end of ten years his investment is $16.00 an acre. Continuing this calculation, at the end of seventy years, the sons or grandsons of the original planters would find their inherited holdings in growing timber representing an investment of $1,000.00 an acre; and, suppose the forest crop has now reached sufficient maturity to be manufactured into lumber, having escaped the hazard of fires and cyclones and yielding 20,000 feet of merchant-

able logs to the acre, we find a stumpage cost of $50.00 a thousand for immature timber grown to order in contrast with a present average stumpage price of $5.00 per thousand now obtained for giant forest trees that have been seeded and nurtured in Nature's forests since Columbus discovered America.

The above figures reveal the low estimate we place on a natural resource that is fast being exhausted. The consumers of lumber complain at any advance in its price and saw mill owners confronted with annually increasing taxes on their reserves of standing timber, cannot limit their operations. Their stumpage must be cut into lumber and sold at competitive prices to pay taxes, deferred interest and principal on his bonded raw material. Not one lumber manufacturer in a hundred can afford to conserve his forest resources by cutting only the mature trees which would double the cost of logging operations, making his product thus obtained so expensive that no profit would result.

Stumpage values in recent years have steadily increased in value, but even at present prices, forest trees are the cheapest crop that grows out of the ground; cheaper than cotton at two cents a pound or corn at five cents a bushel. Suppose wheat or corn were century plants like pine and oak trees; it would require an adding machine to compute the price of a loaf of bread.

The American people do not realize or fully appreciate the splendid quality and low price at which they have been buying their forest products, demanding clear or high grade lumber for many purposes, when lower grades would economically have served their purpose. Extreme cheapness in any commodity always results in waste and improvidence in its use.

Fifty years ago our western plains were stocked with great herds of buffalo, a nature product, common property, roaming the prairies unowned, costing no man anything for sheltering, care or pasturage, tempting the cupidity of reckless pot hunters to proceed to their wholesale slaughter, the hide and tongue being the only parts of this valuable animal resource of sufficient value to be profitably transported and sold in competition and substitution of domestic products for a like use. It is hardly believable by the present generation that fifty years ago a full grown buffalo, in prime condition, weighing one thousand pounds, had a less market value than a single porterhouse steak served to-day in any first-class hotel or restaurant.

There is no immediate danger of a serious shortage in our supply of lumber products, but the time has come when conservation of our forest resources demands thoughtful consideration. The National forest reserves should be withdrawn from sale and held in cold storage just as long as privately owned stumpage is cheap and abundant. The present sawmill owners are financially unable to practice effective conservation of their stumpage holdings. Increasing annual taxation of forest lands, and the exceptional nature of lumbering operations, requiring the purchase of extensive timber holdings to provide raw material sufficient to keep their saw mills supplied with logs long enough to justify the investment in building and equipping a modern plant to manufacture lumber, necessitating the owners of saw mills to borrow large sums of money, or bond their reserves of standing timber.

The pressing interest charges, added to the increasing annual taxes on his stumpage holdings, force the continuous operation of the saw mill, and the sale of the product at whatever the market price may be, to furnish means to pay his imperative obligations. This is not a theory but a condition governing the lumber industry, making conservation of privately owned forests impracticable except in rare cases where ample capital enables the operator to cut only the mature trees, preserving and protecting the younger growth, hoping that advancing prices of stumpage will repay him for present loss through his more expensive logging operations.

Human nature shows very little change since the days of Solomon; self interest in large measure still controls

our actions. Conservation of our privately owned forest resources will never become effective until there is a present or prospective profit in practicing conservation. Our National forest reserves, now under legislative control and administration, should be supplemented by the several State governments, as only the Nation or the State can afford to hold forest lands in reservation. The cost of protection and reforestation being borne by all the people, forest lands now held by the State or the Nation should be withdrawn from sale, protected against fire and reserved for future use, following the wise providence of the rulers of Egypt, who in years of plenty stored up their corn against the time of scarcity or famine.

INSECT DAMAGING SPRUCE TREES IN MAINE

By Prof. John M. Briscoe

DURING the past summer considerable attention has been directed to an insect which is damaging spruce and fir trees in this State.

Inquiries and specimens of the insect have been received both by the Experiment Station and the Forestry Department of the University of Maine. The specimens were identified as the larvae of the spruce bud-moth (Tortrix fumiferana) which injures spruce and fir, and sometimes also hemlock and larch. This insect feeds on the buds and young leaves of spruce and fir chiefly, causing a brown and withered appearance of the infested trees.

About one hundred years ago the spruce trees west of the Penobscot River and along the coast of Maine were badly damaged and many of them killed by the attack of an insect believed to be this same species. Some thirty to thirty-five years ago another outbreak of the spruce bud-moth occurred, lasting four or five years. During this attack also many of the spruces and firs along the coast were injured, and many of these trees while not killed outright by the insects, were, owing to their weakened condition, left as an easy prey to the spruce bark beetles. Dr. A. S. Packard, in a paper written at that time, comments on the depressing and disfigured aspect of the country about Casco Bay, owing to the depredations of this insect. It was not, however, till the spring of 1909 that this insect again began to attract general attention, first in Pennsylvania, and later in New York and Canada. In 1910 it was much worse in the centres of infestation, and in 1911 it had spread to the coast of Maine, where its work is now attracting much attention. During the past summer the pest was widely distributed over the State, reports having been received from localities in Aroostook, Penobscot, Hancock, and Piscataquis counties, and it very probably occurs in others also.

The insect which is responsible for the destruction is a small caterpillar about three-quarters of an inch in length when full grown. Its head is blackish, the body ranging from pale brown to a rich umber brown, diffused with green, each joint with several conspicuous whitish warts, each with a dark centre from which a single hair arises. The miller or moth is about one-half inch in length, measuring when spread out nearly an inch from tip to tip of wing. The legs, body and hind wings are a glistening umber brown, the fore wings have a ground color of bluish gray, and when freshly emerged marked with several conspicuous blotches and dashes of dark brown to almost black. The eggs are pale green, scale-like, flat beneath and slightly convex above; and are laid soon after emergence of the moth. The insect passes the winter on the trees as very small caterpillars which, as soon

as the new growth starts in the spring, begin to feed on the leaves of the terminal twigs, thus causing the brown and withered appearance of the trees later in the season. These caterpillars stop feeding by the middle of June and transform to the chrysalis or pupa stage in thin webs among the living and dead needles at the ends of the branches, sometimes matted in a nest-like formation, and sometimes more or less suspended from the terminal twigs. By the first of July the adults begin to come out from the chrysalis stage and appear on the wing as small grayish moths, often appearing in vast numbers on the trees and flying toward light. They continue to fly and to deposit their eggs in small greenish masses on the needles of the trees until about the middle of July, when the moths die and disappear. The eggs soon hatch and the young caterpillars become partly grown before the end of autumn, passing the winter among the terminal shoots of the trees, where they remain until the next spring, when the life process is repeated.

There is no practical way of protecting forest trees from the attack of this insect, but in the case of a limited number of small decorative trees around a residence or in a park, the foliage could be protected by spraying with arsenical solution about the time of the opening of the buds and the appearance of the new growth in the spring. The spray should contain 2½ pounds of arsenate of lead to every 50 gallons of water.

The best information obtainable regarding the seasonal history of this insect indicates that there is no occasion for any great alarm as to its continued presence, or any fear of extensive loss of spruce and fir as a result of its work. The spruce bud-moth has many natural enemies which multiply very rapidly as the Ichneumon and Braconid flies, both of which were, fortunately, very numerous this year in this region. These may be counted on within a few years to reduce the numbers of the pest to a point where the limited amount of damage attracts no attention and does little injury. Since, however, one or more years may elapse before these parasitic enemies of the spruce bud-moth gain control, the destruction of some of the spruce and fir trees in the infested zone is inevitable.

CONSUMPTIVES ON FOREST RESERVE

NOTEWORTHY plan to establish camps in the State forest reserve where persons convalescing from tuberculosis or threatened with that disease might spend the greater part of the year—spring to fall—and be provided with light work that would place them upon a self-supporting basis was outlined a few days ago before the Wisconsin Anti-Tuberculosis association by E. M. Griffith, the State forester of Wisconsin.

Mr. Griffith, who had been asked to give his views as to how a part of the State's forest reserve of almost a half million acres might be utilized in the fight against the white plague, suggested that the State board of forestry might set aside several thousand acres of land, including one or more lakes, for the use of those recovering from tuberculosis and of those menaced by the disease. It would be necessary, he stated, for the legislature to make an appropriation, which need not be large, to cover the cost of building shacks for the patients and of providing medical attendance for them.

The forestry board, Mr. Griffith said, might give these patients light work in its nurseries and in planting trees. This work could be so arranged that the strength of none would be overtaxed. For instance, some might work two hours in the forenoon and two hours in the afternoon, some three hours in the forenoon and three hours in the afternoon, and some four hours in the

forenoon and four hours in the afternoon, just as the physicians deemed advisable. The compensation would be something like 15 cents an hour. Those working only four hours a day could earn enough to pay for their board, and those who could do a fair day's work would earn considerably more than their board. The idea, of course, would be not to overwork anybody and to give all time and opportunity for rest and recreation.

In the cases of patients who have recovered from tuberculosis, for instance, those discharged from the State tuberculosis sanitorium at Wales, as cured, there is a necessity for a period of outdoor life. Many suffer a relapse if they return at once to close work in office or to labor in foundry or factory. These relapses are very dangerous. Then again those threatened with tuberculosis need outdoor life at once.

The camps, Mr. Griffith suggested, might be located among the pines, on dry, sandy soil, near the shores of one or two lakes that are not so densely shaded as to shut out the sunlight or to cause dampness. In this way the cures of many could be completed and many would be saved from incipient or threatened tuberculosis.

Another suggestion that Mr. Griffith made was that those who, after spending the summer in the State forest reserve, found that it was so beneficial to their health that they wished to stay longer, could lease small tracts in the State reserve and raise garden truck, chickens, and the like, which would find a ready market at the public resorts and private homes round about.

Physicians who have made a special study of tuberculosis have expressed themselves as strongly in favor of Mr. Griffith's plan. It is not necessary, they state, for persons afflicted or threatened with tuberculosis to leave the State, but they must live out of doors and any opportunity for outdoor life in upper Wisconsin, amid the sand and the pines, would be a great help in curing tubercular patients. Mr. Griffith's plan to shelter them, feed them and give them medical care, and at the same time provide light work that will permit them to be self-supporting, so that they will not be subjected to any real expense and at the same time will not be charity patients, is regarded as a long step forward in the State's fight against tuberculosis.

COMING MEETINGS

Officials of forestry, lumber, timberland and fire protection associations are invited to send to AMERICAN FORESTRY notices of their meetings to be published in this column.

October 29—Third quarterly meeting of Directors of the American Forestry Association, at the Railroad Club, New York City.

November 5—Georgia-Florida Saw Mill Association, Tifton, Ga.

November 13—Lumber Manufacturers' Association of Southern New England, Hartford, Conn.

November 14—Empire State Forest Products Association, Watertown, N. Y.

November 19-21—National Federation of Retail Merchants, Planters Hotel, St. Louis, Mo.

December 2-3—Western Forestry & Conservation Association, Seattle, Wash.

December 4-6—National Rivers & Harbors Congress, New Willard Hotel, Washington, D. C.

December 7—North Central Missouri Retail Lumber Dealers' Association, Moberly, Mo.

January 21-23—Ohio Association of Retail Lumber Dealers, Cleveland, Ohio.

January 22-24—Southwestern Lumbermen's Association, Kansas City, Mo.

THE PRESENT SITUATION OF FORESTRY*

By Chief Forester Henry S. Graves

A REVIEW of the work of forestry in this country during the past year shows that, in many directions, there has been substantial progress and positive achievements. On the other hand, the continued organized attacks on the National Forest system, and the efforts to break it down or cripple it, present a situation of real danger which the country should realize and vigorously meet. We have before us a task of constructive activity in practical work, extending and building on foundations already laid; we have also the task of preventing a destructive attack upon National forestry.

During the past few years public interest in forestry has been rapidly changing from a mere inquiry in regard to its purpose to a vigorous demand for practical results. This more intelligent public sentiment is now finding its expression in a growing appreciation of the need of better forest laws, greater State appropriation for fire control, and increasing interest in forest protection by private timberland owners. It often happens that public attention is caught only by the most striking new departures and developments, such as a change in public policy or important legislation, while but little is known of the steady advance in applied forestry. The past year has been signalized not so much by new undertakings as by marked accomplishment in the effective carrying out of work previously inaugurated.

PROGRESS IN NATIONAL FORESTRY

Every year shows increased efficiency in the administration of the National Forests. The most conspicuous advance has been in organized fire protection. The disastrous year of 1910 taught many lessons. While that disaster could not have been avoided in the absence of better transportation and communication facilities and without a larger patrol force than the Forest Service could put into the field, it nevertheless showed how, even under the present conditions, the work of protection could be made more effective. Full use was made of the experience gained in that year, and during the past two seasons the loss by fire has been kept down to a comparatively small amount through the efficient system now in force. The problem, however, of fire protection on the National Forests is far from being solved. There still remain to be built some 80,000 miles of trails, 45,000 miles of telephone lines, many miles of roads, many lookout stations, and other improvements, before even the primary system of control will have been established. The funds at the disposal of the Forest Service are still inadequate to employ the patrolmen needed to meet more than an ordinary emergency. There is even yet danger, therefore, that in the case of a great drought, like that of 1910, some fires might gain the mastery and a similar disaster follow.

An account of the progress of the work of the Forest Service in the administration of the National Forests would be an enumeration of the different activities in which the work is going on with constantly growing effectiveness. Many of the local difficulties of administration are rapidly disappearing. This is due to the steadily closer coordination of the interests of the Government with those of the people living in and using the Forests. More and more these people are coming to appreciate that their interests and those of the National Forests are one. With a better understanding of the aims and methods of the Forest Service, local difficulties are disappearing and local support of the Service is largely replac-

ing opposition. Those who are aiming to destroy the National Forest system are not the settlers and others who use the Forest, but rather men who seek for their own advantage special privileges to which they are not entitled, and who wish to acquire, for little or nothing, valuable resources for speculation and personal gain.

During the past year the Weeks Law, authorizing the purchase of lands on navigable streams, has been put into effect, and the Government has already entered into contracts for the purchase of 230,000 acres in the Southern Appalachian Mountains, and about 72,000 acres in the White Mountains. These lands are being secured on the most desirable areas, and it has been possible to obtain them for reasonable prices. A special feature of the Weeks Law is the co-operation between the Government and the States in fire protection on watersheds of navigable streams. The law provides $200,000, until expended, for such co-operation; but this money can be used only in States which have already inaugurated a system of fire protection under public direction. During the year ending 1911 there were 11 States which qualified under this law, receiving in the aggregate about $40,000. During the current year sums varying from $1,500 to $10,000 have been allotted to the States of Maine, New Hampshire, Vermont, Connecticut, New York, New Jersey, Maryland, Wisconsin, Minnesota, Oregon, and Washington. There is still sufficient money left from the original appropriation for substantial co-operation during another year. It has been the aim of the Forest Service to spread the money over three years in order that there may be a full demonstration of what can be accomplished and at what cost. It will then be possible to present to Congress a satisfactory basis upon which to consider whether Federal aid to the States should be continued.

The most urgent need of the National Forest work is more ample provision of the funds necessary for adequate protection of the Forests against fire. It is especially urgent that the work of constructing roads, trails, telephone lines, and other improvements needed for fire protection be extended much more rapidly than at present.

PROGRESS IN STATE FORESTRY

A very great obligation rests upon the State governments in working out the problem of forestry. Organized fire protection under State direction, the establishment of a reasonable system of taxation of growing timber, honest and conservative management of State forest laws, education of woodland owners to better methods of forestry, and such practical regulation of handling private forests as may be required for the protection of the public, are problems which require the immediate action of all States.

While no State is as yet accomplishing all that it should, a number of them are making very rapid progress, and are giving as liberal money support as perhaps could be expected under the present conditions. The feature of State forestry which stands out most strongly is that a number of States have gone beyond merely passing forest laws, and have begun to provide the funds necessary to achieve practical results. At last it is beginning to be recognized that the prevention of fire is the fundamental necessity, and that this can be accomplished only through an organized public service. In order to make laws effective, there must be adequate machinery to carry them out. The fundamental principle of fire protection is preparation. A forest region must be watched for fires, both to prevent their being started and to reach quickly and put out such as from one cause or another may get under way. The new State legislation recognizes this need, and already there has been inaugurated a measure of watchfulness in the season of greatest danger, through patrol or lookouts under State direction. During 1911, which was a banner year in the enactment of State legislation, laws related chiefly to fire protection were passed by Connecticut, Massachusetts, Minnesota, New Hampshire, New Jersey, Oregon, Washington, and Wisconsin; while Colorado created the office of

State Forester. Since the beginning of 1912 Maryland and New York have amended their forest laws, and Kentucky has passed its first complete law

It is exceedingly gratifying that substantial progress is now being made in the South. Unfortunately, however, none of the Southern States, except Maryland, has hitherto been able to qualify to receive Federal aid and fire protection under the Weeks Law. It is hoped that during the coming year progress will be made in those Southern States in which practically nothing has yet been done.

*From a paper read to lumbermen and foresters at the National Conservation Congress, Oct. 3.

FOREST AREA LARGELY INCREASED

THE President has issued a proclamation making alterations in the Superior Naitonal Forests boundaries, the net result of which is to increase the gross area of the Forests from 910,000 to 1,276,100 acres. The corrected boundary includes 380,555 acres of new land, while it eliminates 14,455 acres previously included.

The Superior National Forest lies in the northeastern corner of Minnesota, between Lake Superior and the Canadian line. At present it contains little timber of merchantable size, practically all of the original stand having been removed or destroyed by fire before the National Forest was created. The Government is, however, holding and protecting the land for the sake of the future yield of timber which it will produce under forestry methods.

Practically none of the land has any agricultural value, and unless used to grow trees it must remain a mere waste. To grow timber it must be protected from fire. The areas now added are in general character similar to those previously embraced within the Forest, and will be protected and administered along the same lines.

The eliminated portions are made up principally of private holdings and contain too small an amount of land suitable for forest purposes to make it worth while for the Government to retain the areas in the Forest. Throughout the Superior Forest the percentage of alienated land is heavy, and the same is true of the portions newly included, so that the amount of Government-owned land added to the Forest is much less than the gross area figures would indicate.

Under the proclamation the eliminated lands are withdrawn for classification, following which they will be restored to settlement and entry by the Secretary of the Interior after such notice as he may deem advisable and as he may determine this course to be compatible with the public interest.

There is one other National Forest in Minnesota, called the Minnesota and situated at the headwaters of the Mississippi, about Lake Winnibigoshish. It contains about 295,000 acres, and was created from Chippewa Indian lands after the virgin timber had been cut off under forestry regulations. In consequence it has a much more promising growth of young pine and Norway pine than has the Superior at the present time.

THE EUCALYPTUS

By Harry D. Tiemann

EUCALYPTUS for California is a proposition worthy of hearty endorsement, but it should stand upon its own merits and not upon some fictitious attributes. Otherwise vast disappointment and losses to the hundreds of small investors who are counting upon the Eucalyptus as a timber producing tree are in store. In your July number appears an interesting article upon San Diego's Municipal Forest. The statement is there made that "Eucalyptus is an acceptable substitute for almost any of our American hardwoods." In the same issue there appears a news note entitled Fast Growing Eucalyptus, to which has been subjoined apparently by the editor a comment that "it is almost unbelievable that trees growing so rapidly produce a timber as hard and tough as hickory." Unquestionably these statements have been made in all good faith, but evidently without a first-hand knowledge of the kind of lumber which these quickly growing trees less than half a century old will produce. As this lack of understanding is very general and is likely to lead to serious consequences, I would like, Mr. Editor, with your assistance, to sound a note of warning, since I have had considerable experience in drying the wood from these trees.

While much that has been claimed as to the marvelous growth of this tree is indeed true, the rapid growing species, particularly the blue gum, E. globulus, which is the one of most consequence *is not to be considered a timber producing tree* during its early life of thirty or forty years, for reasons about to be given. It is true that the old trees of Australia which are of great age and size produce lumber of good quality which can be seasoned and utilized as other hardwood lumber, but not so with the young trees such as are growing in California, less than forty years old. This is just where the fallacy in the arguments of the eucalyptus promoters comes in. The trees actually produce in volume of green wood what is claimed, but only a very small portion of this is convertible into useful lumber. The main troubles with the wood are first, that the trees themselves while living contain internal stresses, which cause the logs to check as soon as the tree is cut, and the boards to warp directly from the saw. Then in drying the shrinkage is not only very unequal, but it is three or four times as great as hickory, and unlike other hardwoods, it begins to shrink with the first loss of moisture as high as eighty per cent of the dry weight. Moreover the dry wood will not hold its shape well. In air drying the wood either checks badly, honeycombs, or warps, generally all three. Small specimens and occasionally a larger piece of lumber, and very carefully selected material have dried successfully, but this represents so small a proportion of the standing timber that the profit is gone. In some experiments in drying this lumber in a special kiln of my own invention I have succeeded in turning out some really fine boards which will compare favorably with oak and other hardwoods, but it must be remembered that this represents selected material, and probably from less than one per cent of the standing trees, and even so less than half of the scale measure of the logs from which cut. For small articles such as tool handles good material can be had by selection, and some concerns in California are now manufacturing these, but the market for this material is necessarily limited and such small stock does not require a very great stumpage.

Mr. Watson in his article does not state what species he is planting at San Diego. It is possible that some of the slower growing eucalypts, the value of

which for lumber has not been tried, such as E. resinifera, might prove good, but then on the other hand their rates of growth are so slow as to be of little or no advantage over other hardwoods.

This matter should be made very plain for the benefit of the great number of people who are investing in eucalyptus planting. For fuel, windbreaks, and soil protection, as well as for many other purposes, the value of Eucalyptus trees for California can hardly be over-estimated, but the fictitious claims which are sometimes made for the blue gum and other species as a lumber producing tree in less than half a century of growth should be refuted so clearly that "he that runs may read."

NEW PLAN OF SEED EXTRACTION FROM PINE CONES

THE Forest Service is experimenting with new ways of extracting the seed from the pine cones cheaply and efficiently. The policy is to collect seed in good seasons and in localities where an abundant crop has been produced. Thousands of bushels are gathered in one place and from these the seed has in the past been extracted by the slow process of heating the cones artificially to make them expand, when the seed is shaken out, collected, and cleaned. When conducted in the winter on a large scale the work is greatly delayed by the difficulty of securing plenty of hot air, and at the same time keeping it dry. The cones give off their moisture and soon surcharge the air to saturation and the admittance of fresh air lowers the temperature below the point of effcetiveness. For these reasons the capacity of even large plants is usually limited to turning out from one hundred to one hundred and fifty bushels per day. During the last season the Service has been experimenting with modifications of a grain threshing machine and has been successful in District 1 this summer in threshing white pine seed from the cones when the latter were partially dry. It is thought that by further modifying an arrangement of the teeth in the cylinder seeds may be successfully threshed from cones like yellow pine, Douglas fir, and even lodgepole pine. If this proves possible the capacity of a seed extracting plant can be increased to ten times its former output. The chief difficulty to overcome is the cracking and spoiling of the seeds during the process of threshing. A small experimental plant on the Kaniksu National Forest was installed this spring and produced results which are greatly encouraging. Very little harm was done to the seed and the cones were handled at the rate of one thousand bushels per day where formerly one hundred and fifty bushels was a good day's work.

JAMAICA'S FOREST WEALTH

Recently the first cargo of hardwood timber shipped from Jamaica to the United States was forwarded from Port Antonio. This timber was bought by an agent from New York and consisted of mahogany and cedar trees. Two shipments have thus far been made and other shipments are said to be contemplated. Although lumber does not comprise any considerable part of Jamaican exports, some shipments of hardwood timber have been made from Kingston for a number of years, chiefly to European ports. A body of something like 35,000 acres of forest land is in the parish in which Port Antonio is situated, and the government is building roads for the development of this timber. The land is part of a purchase made by the government from an improvement company which originally received the land as part of a railway grant. The entire island is said to contain 400,000 to 500,000 acres of forests.

THE MANURING OF FOREST TREES

By Arthur Smith

During the past quarter of a century the question of manuring forest trees has been given considerable attention in Europe, and, among other experiments, that of using sewage effluent has been tried.

Near Berlin irrigating a forest of trees having considerable size by a monthly application of sewage water during two growing seasons was a decided failure and it caused the death of many of the trees. A similar irrigation at Gerlitz gave better results. In this case, however, the growth was considerably younger. The city of Berlin has obtained encouraging results by top dressing the soil of coniferous woods with city refuse.

In view of the long period between the planting and the cutting of a forest the direct application of manure in any form is not likely in a general way to prove remunerative. At the same time the question of helping along a plantation of young trees, especially conifers, is worth considering and in the earlier stages in the life of forest trees growing in poor soil the value of some form of manuring may possibly become an acknowledged fact in practical forestry.

For instance on poor sandy soils where the nitrogen content is very small the problem of supplying this necessary plant food in a slowly available form is worthy of consideration. The idea of applying nitrates or other commercial forms of nitrogenous fertilizers may be put aside as impracticable both on account of cost and because they are too rapid in action, besides causing an excessive growth of weeds. Making use, however, of atmospheric nitrogen by growing on the land some form of the Leguminosæ appears to be feasible an dworthy of trial. Upon some sandy soils in Europe lupins have been used for this purpose and good results are reported. Lupins would scarcely be so suitable for this country as some of the clovers, such as the White Clover, *Trifolium repens* and Alsyke, *Trifolium hybridum*. An ideal method would be to plow in a crop of clover the season previous to planting, then sow clover again and plant the trees in the young clover. Failing, this clover could be broadcasted over he ground in the spring. To obtain a stand of clover upon the more sandy soils the application of some form of line would be obviously necessary.

It is of course well known that the amount of mineral matter retained in lumber is comparatively small, and, by the fall of their leaves, trees during their growth return to the soil the greater part of the mineral matter taken from it; this applies, however, more to deciduous species than to conifers. But the main point to be considered is that of giving young newly planted trees a good start and helping them along during the first few years of their life, when they have the greatest struggle for existence. It is in this connection that the value of giving the soil some previous preparation upon the lines suggested above comes in—of course where it is practicable—as not only is plant food added to the soil in a slowly available form but, what is of the greatest importance, the early growth is accelerated, being measured by feet instead of inches.

Another means which works to the same end and which is more applicable to the heavier classes of soils is that of keeping the ground in clean cultivation during the first two or three years of the trees' growth. During the past season the writer has kept about 8,000 two-year-old conifers under clean cultivation and another block of 5,000 has only had the weeds out and left lying. The soil of the latter is, if anything, better than the former, but the growth

of the block cultivated has been more than double as much as that uncultivated. At the end of July, one more cultivation was given and Crimson Clover sown at the same time.

Of course it goes without saying that this more intensive syste mof forestry is impossible everywhere or upon a large scale of forest planting involving many thousands of acres of mountain land, and, at the best, planting is generally done upon land that is more or less uncultivatable. At the same time I believe that new plantings should have generally more care given to them than is usually the case, especially upon private estates and farmers' wood lots. There are many situations where some methods of assisting young trees to get a good start are practicable and therefore desirable, and which would, I believe, be in the long run profitable. The conditions connected with the first few years of a tree's life have a tremendous influence upon the subsequent results, both in the period when it is fit to be turned into lumber and money, and in the number of board feet which will be produced in a given time.

If a comparatively small expenditure along the lines suggested will accelerate the one and increase the other in the same time, as I feel sure it would, then surely it is worth while.

FOREST SERVICE AFTER FRUIT PEST

ACTING quickly on the instructions of Congress embodied in the bill recently passed by both houses providing an appropriation of $35,000 to enable the Federal Government to assist the fruit interests of California to prevent the importation of the Mediterranean fly into that State, the Department of Agriculture has sent Charles Lester Marlatt, assistant chief entomologist for the department, to Hawaii to inspect conditions there. While in the islands Marlatt will make arrangements to take over the Hawaiian inspection service to prevent the importation of the pest to California, or perfect the organization of a Federal inspection service to cooperate with the Territorial authorities.

Marlatt said before starting that the Department of Agriculture was anxious and determined to establish an inspection service over all fruits leaving the islands, to guard against the exportation of the dreaded Mediterranean fly or any other fruit pests, and that this service would be made as effective and thorough as the funds allowed for the purpose by Congress would permit. Marlatt thinks that he will be able to hit upon a feasible plan of uniting the efforts of the National Government with the fruit inspection service already in operation, and which is provided at the expense of the California fruit-growers. If this tentative proposal proves unacceptable, he will organize a separate Federal bureau.

The selection of Marlatt for this work has given general satisfaction among the California fruit-growers, as he is acknowledged to be one of the highest authorities on entomology in the Government service. He has been with the Department of Agriculture since 1889, and in 1901-02 made an entomological trip for the department to Japan, China and Java and other islands in the Malay Archipelago.

MAHOGANY FOR CANADA

THE enormous increase in building operations throughout Canada has been instrumental in increasing imports into that country in products which some 15 or 20 years ago would hardly be noticed in commercial statistics, says Consul Felix S. S. Johnson, of Kingston, Ont. Mahogany, for instance, is an article which Canada half a generation ago had very little use for, one reason being that in the early growth of the country office buildings, houses and hotels were erected rather on a cheap scale. Mahogany in Canada has always been considered somewhat of a luxury, particularly for office fittings and decoration purposes. Today this feeling has somewhat changed. Mahogany is very generally used; in fact in almost every large banking house or commercial office one generally looks for the finely polished desk and comfortably upholstered mahogany chair.

That Canada is now commencing to build her own railway cars in another factor in the importation of mahogany. Although this is the greatest timber country in the world, the fact remains that no wood grown here can be used for manufacturing good cars. Hard wood in Canada is short grained and it is difficult to get anything that will equal mahogany for durability and finish. Automobiles also require mahogany to be properly finished, and in the last five years large amounts of this wood have been imported by automobile manufacturers who have opened factories in Canada.

The wealth of Canada, which has increased tremendously per capita, naturally calls for more luxurious living. In the old days the best of furniture in the house might be made of any hard wood or even pine, with a veneer finish, while now nearly everything must be mahogany. The wood in the rough brings sufficiently high prices, selling in large lots at $110 to $115 per thousand feet. Although this wood has always been looked upon as more or less of a luxury its use now is becoming general, because at last people are beginning more and more to feel the advantages which it has over other woods; but the supply has been decreasing during recent years, causing corresponding increase in the price.

Tabasco mahogany comes from the southeastern part of Mexico and there is much competition between New York and Boston firms and large dealers in England for the shipments of the few companies operating in the Tabasco wood. One of the largest shipments from the territory received lately into New Orleans approximated 4,000 tons.

Canada imported during the fiscal year ended March 31, 1912, a total of 2,696,455 feet of mahogany, invoiced at $314,409. Of this 301,316 feet came from England (evidently South African mahogany) and 2,364,309 feet from the United States (evidently Mexican and Central American mahogany). This came in free of duty. There were also considerable imports of mahogany veneering, which is classed in imports with veneers of oak, rosewood, cedar, and walnut, which pay 7½ per cent ad valorem under the general tariff, and of which imports in the last fiscal year were $251,522, all from the United States.

GERMANY'S FOREST AREA

Germany has about 35,000,000 acres of forests. This is about one-quarter of the total area of the country. Forty-six per cent of this area belongs to private individuals, 32 per cent to the State and 16 per cent to communities. Half of the remainder belongs to the Crown and the rest to corporations. This area gives three-fifths of an acre to each citizen.

IMPORTANT MEETING OF DIRECTORS

ONE of the most important meetings of the directors of the American Forestry Association in some years, was held at the Railroad Club, 30 Church St., New York, on Tuesday, Oct. 29, there being present Chester W. Lyman, who presided; Col. W. R. Brown, of Berlin, N. H.; Prof. H. H. Chapman, of Yale; John E. Jenks, of Washington, D. C.; Otto Luebkert, of Washington, D. C.; Charles Lathrop Pack, of Lakewood, N. J.; Thomas Nelson Page, of Washington, D. C.; C. F. Quincy, of New York City; E. A. Sterling, of Philadelphia; Frederick S. Underhill, of Philadelphia; Capt. J. B. White, of Kansas City, Mo.; John L. Weaver, of Washington, D. C., and P. S. Ridsdale, executive secretary of the Association.

The chief matter discussed was a tentative plan for co-operative work by the American Forestry Association and the committee appointed by the forestry section of the Fourth Conservation Congress held Oct. 1-4 at Indianapolis. The delegates of the Association who attended the Conservation Congress, reported in chief, as follows:

"An unusual opportunity has come to the American Forestry Association to do constructive work which will not only further the general cause but strengthen the Association and make it a power and influence in academic and practical forest work. It is a chance to continue the general forest propaganda more effectively and at the same time work definitely towards the solution of the more important specific problems.

"At the several informal meetings of the lumbermen and foresters in attendance at the Fourth Conservation Congress at Indianapolis, October 1 to 4, the question of more definite work throughout the year was thoroughly discussed. Two distinct lines of activity seem advisable: The first is arranging the program of the Conservation Congress sessions, so as to give more prominence and publicity to forest problems. The second involves the appointment and guidance of standing committees, which shall report to a forestry section of the Congress on definite problems relating to forestry and lumbering.

"The representatives of the American Forestry Association present volunteered the services of their organization in furthering this work in co-operation with a committee made up of E. T. Allen, Captain J. B. White and H. S. Graves, which was appointed to represent the private and government timber interests. This latter committee represents the organized timberland owners and Forest Service, and it was not until the Indianapolis meeting that they came to realize the strong influence the rejuvenated American Forestry Association, as a national body, could and will exert in the solution of problems of mutual interest.

"The most important feature of the proposed organization is the appointment of standing committees for the investigation of matters of vital importance to the lumbermen, timberland owners and foresters.

"In the choice of men to serve on the committees and on the plan of following up their work and securing definite action will depend the success of the plan. It is the thought to appoint men best qualified to handle the various subjects, regardless of their affiliations.

"Following the practice of other organizations which work with standing committees, it is suggested that at least one complete report on one of the definite subjects assigned be submitted each year, and the other subjects covered by progress reports. It would be optional with the committee which subject to place the most emphasis on. New subjects would be assigned from time to time.

"A committee appointed at the Conservation Congress, comprised of E. T. Allen, J. B. White and H. S. Graves, is

already in existence. Another committee, representing the American Forestry Association and made up preferably of members of the Executive Committee, should be appointed. This committee should have a secretary or chairman to assist the Secretary of the Association in the technical work relating to the standing committees, or to work directly with the chairman of the other committees."

The delegates suggested a tentative list of subjects for investigation, and some names of committeemen, and the subjects, and the committees having them in charge will be announced after the two committees meet.

Following a long discussion of the proposed work, and a hearty endorsement of the plan by all the directors, Chairman Lyman appointed a committee of three members of the executive committee to take charge of the investigative work for the Association, and confer with the committee appointed at the Conservation Congress. This committee comprises Charles Lathrop Pack, Col. W. R. Brown and E. A. Sterling.

The opinion was generally expressed that the work should lead to securing definite results of a practical nature and will materially aid in securing the closer co-operation of lumbermen and foresters, and a decided extension of the work of the Association. It was decided that Executive Secretary Ridsdale shall attend the annual meeting of the Empire State Forest Products Association at Watertown, N. Y., on Nov. 14; and that Governor Robt. P. Bass, E. A. Sterling and P. S. Ridsdale attend the annual meeting of the Western Forestry and Conservation Association at Seattle on Dec. 2 and 3.

It was also decided to hold the annual meeting in Washington, D. C., in January at some date to be decided later.

UNIFORM STANDARDS FOR STATE FORESTRY

IN the May number of AMERICAN FORESTRY mention was made in these columns of the Conference of New York State Departments interested in Forestry, which was held at Albany on April 10th. The Conference appointed a Committee on Standards to consider uniform standards which should be employed in connection with State work in forestry in New York. The object of this was to secure uniform methods in all forestry work which might be done within the State, in order that the results might be readily co-ordinated, even though they might be secured by different departments. The personnel of the Committee on Standards is as follows:

Dean Hugh P. Baker, State College of Forestry, Syracuse University, Syracuse, N. Y., Chairman.

Prof. Walter Mulford, Cornell University, Ithaca, N. Y.

Wm. G. Howard, Asst. Superintendent of State Forests, Conservation Commission, Albany, N. Y.

The Committee held meetings in May and June, and also one on October 26th, at which the questions pertaining to the standardization of forest mapping were considered. The Committee held it desirable to retain the forms and symbols employed by the Forest Service, insofar as these forms and symbols might be applicable to conditions in New York State. It was deemed advisable to use the following standards for all forest mapping work within the State. The following specifications were made up:

Forest Maps. Types to be indicated by colors. Eight forest types have been outlined to include all the forests within the State. In cases where it is not feasible to indicate types by colors, a system of hatchure may be employed. The stand of timber to be designated by the alpha-numerical system, placing within each type a circle, inside of which the

name of the species will be indicated by letters, and the quantity of forest products of that species by numbers.

It is expected that considerable benefit will be secured and that duplication of work will be avoided by the introduction of the standard methods in mapping within the State. The Committee intends, at an early date, to consider the questions of standard forms to be used in forestry work.

AN APPRECIATION

The *Lumber World Review* of Chicago in an article headed "A Remarkable Number for Lumbermen" says of the October issue of AMERICAN FORESTRY:

"The October issue of the magazine, AMERICAN FORESTRY, formerly named CONSERVATION, and published by the American Forestry Association, Washington, D. C., is one of the most remarkable issues of any periodical for the perusal of lumbermen that has come to hand for many years. Space will not permit more than a brief reference to these interesting articles, but lumbermen who devote any attention to these subjects, and nearly all lumbermen do, should purchase this number before the edition is exhausted, in order to secure the benefit of the splendid articles contained therein. One of the most important of these interesting writings is the first article in the magazine entitled, 'Why Do Lumbermen Not Apply Forestry?' This is written by Dr. B. E. Fernow, formerly Forester of the United States and now a member of the faculty of the University of Toronto, Ont. The next article is by George M. Cornwall, editor of the *Timberman*, Portland, Oregon, on 'Logging Engineering.' This excellent article has been printed in the *Lumber World Review* within recent time. E. A. Sterling, President of the American Wood Preservers' Association, whose writings have frequently adorned these columns, has an interesting discussion on the subject, 'Wood Preservation as a Factor in Forest Conservation.' E. T. Allen, Forester of the Western Forestry & Conservation Association, of Portland, Oregon, some of whose articles have already appeared in this journal, treats on 'Method of Forestry Campaigning.' Mr. Allen also contributes a poem entitled 'The Fire Bug and the East Wind.' Henry E. Hardtner, President of the Louisiana Forestry Association, writes on the subject, 'South's Timber Disappearing.' George H. Holt, of Chicago, head of the Holt Lumber Co. and American Lumber Co., discusses the subject, 'Is Lumber a Crime?' and devotes special attention to the discrimination made lately in some quarters against wooden shingles. Jerome H. Sheip, a prominent lumberman and box manufacturer of Philadelphia, Pa., has an interesting article on 'American Forestry.' Fred R. Fairchild, of Yale University, treats on 'Forest Tax Legislation.' Frederick S. Underhill, of Wistar, Underhill & Nixon, leading lumbermen of Philadelphia, Pa., takes as his text 'The Price of Forest Products,' and quotes a member of Congress as stating: 'I want the duty on lumber reduced that the mechanic may build his home cheaper.' Mr. Underhill says that the Payne-Aldrich bill reduced the duty on lumber from $2 to $1.25, and the price of lumber is much higher instead of lower. Thornton A. Green, of Munising, Mich., President of the Northern Forest Protective Association and prominent in lumber manufacture, contributes an article on 'Put Your Camp Fire Out,' and gives samples of the advertising undertaken by the association to prevent damage to the forests through fires. P. F. Cook, associate editor of the *St. Louis Lumberman*, writes an unusually interesting article on the 'Social Side of Lumber Life.' C. B. Sweet, of Kansas City, Vice President of the Long-Bell Lumber Co., describes the 'Long-Bell Experimental Farm,' located near Bon Ami, La. Other shorter articles, containing important information for lumbermen and timber owners, abound in this issue."

A NEWLY FOUND TIMBER AREA

Away up in the northern part of Canada, somewhere around what is known as Spirit Lake, the Canadian Government reports an area of 2,400 square miles on which timber three to four inches in diameter is growing. The rangers report that this area has been covered several times with forests which have been burned off. The present stand of timber has grown up since the last fire. If this area can be protected from flames a large population and an immense lumber industry will spring up in that country after the forests now growing have become large enough for manufacturing. Some of the area has merchantable timber growing in protected places, the soil is deep and can always be counted upon to grow another crop of trees if the fires are kept out.

QUESTIONS AND ANSWERS

New Rochelle, N. Y.

EDITOR AMERICAN FORESTRY.—I am contemplating the purchase of a ten-acre eucalyptus grove in the vicinity of Clay, Sacramento County, California. The price is $200 per acre, 10 per cent down and the remainder in monthly instalments of $20. The company plants the trees and takes care of them for ten years, when they are to be marketed. Five hundred trees to the acre; and no interest on deferred payments nor taxes to be paid by purchaser. The company estimates that ten acres will produce 100,000 feet of timber in ten years. Is this correct? Is there a good market for eucalyptus at the present time, and at what price does it sell per M? Kindly give me your opinion as to the desirability of this purchase as an investment for a person of moderate means.

WILLIAM C. CROSBY

Your letter to the Editor of AMERICAN FORESTRY has been referred by him to the Forest Service for reply. For your information on eucalyptus, I take pleasure in requesting the Division of Publications to send you the following Forest Service publica.-itons: Circular 59, a planting leaflet on eucalyptus; Circular 179, "The Utilization of California Eucalyptus," and Bulletin 87, "Eucalypts in Florida."

Detailed information on the more important species which have been introduced into this country can also be found in Forest Service Bulletin 35, "Eucalypts Cultivated in the United States," a copy of which may be obtained from the Superintendent of Documents, Washington, D. C., for $1 (stamps not accepted). There has also been prepared by the Forest Service in co-operation with the California State Board of Forestry a bulletin entitled "Yield from Eucalyptus Plantations in California," which can be obtained through Mr. G. M. Homans, State Forester, Sacramento, Cal. I believe these various publications will give you the information you desire.

I would call your particular attention to the discussion on pages 31 to 33 of Bulletin 87, concerning the eucalyptus in Florida. Whether the eucalyptus is planted in Florida, California, or elsewhere in the United States, our present knowledge of the timber produced by plantations in this country does not justify a too sanguine estimate of returns where it is proposed to produce material other than fuel woods, which requires a much longer period to reach marketable size. While it is believed that a eucalyptus plantation will yield under favorable conditions a revenue equal to any forest plantation, it remains to be proven whether in the production of large material it will yield the phenomenal returns generally claimed for it.

I regret to inform you that no provision is made for the free distribution by the Forest Service of forest tree seeds or seedlings. I take pleasure, however, in inclosing a list of dealers from whom the stock which you desire can be obtained.

LOUIS S. MURPHY,
Acting in Charge of Forest Management in the East.

Charleston, West Va.

EDITOR AMERICAN FORESTRY.—Can you give me the following information, viz.: Have you any record which shows how many million feet of standing timber (board or cubic measure) is computed to now be contained within the limits of West Virginia? Also what cut of timber ought to be annually made in order to preserve these forests from year to year, taking into consideration the felling of timber and new growth?

WM. SEYMOUR EDWARDS.

DEAR SIR: Your letter of October 5 to the American Forestry Association has been referred to the Forest Service for reply. I take pleasure in informing you that the only available records, as far as I know, of the standing timber in West Virginia are to be found in the report of the West Virginia Geological Survey, Volume 5, 1911. According to this report, the total area of virgin forest in West Virginia is 1,574,295 acres. Of this area, 190,-000 acres contain from 20 to 90 per cent of spruce in Randolph, Pocahontas, Webster, Pendleton, Greenbrier, and Tucker Counties, with a few outlying patches in Grant and Preston Counties. The quantity of standing timber in these 190,000 acres is estimated at 1,500,000,000 feet of spruce, 1,000,000,000 feet of hemlock and 1,500,000,000 feet of beech, birch and maple. The forests of virgin hardwood contain about 12,000,000,000 feet of timber, something as follows: White oak, 30 per cent; other oaks, 15 per cent; yellow poplar, 18 per cent; chestnut, 12 per cent; maple, 5 per cent; beech, 5 per cent; basswood, 5 per cent; other hardwoods, 10 per cent.

In addition to the 1,574,295 acres of virgin forest, there are 2,882,030 acres of cut-over forest and 5,087,013 acres of farmers' woodlots. On these areas the stand of timber is not definitely known. In some cases, many woodlots have from 1,000 to 5,000 feet of merchantable timber per acre.

As the area occupied by growing timber is not definitely known, the growth that takes place over this area can not be ascertained. From the report of the West Vir-

ginia Conservation Commission it appears that on the basis of 8,000,000 acres of land permanently devoted to productive forest, allowing an annual growth of only 25 cubic feet for each acre, the possible yearly harvest from the whole state would be 1,600,000 feet, board measure. Twenty-five cubic feet of annual growth per acre is a very conservative estimate, and if an area of 8,000,000 acres in the state can be protected from fire and be kept in a productive state, the estimated yearly increment for the whole state is none too great.

You can undoubtedly secure a copy of the report of the Geological Survey from I. C. White, State Geologist, Morgantown, W. Va., and will be able to find more detailed information concerning the timber resources of West Virginia as each county is taken up separately in that report.

RAPHAEL ZON,
Chief of Silvics.

Boston, Mass.

EDITOR AMERICAN FORESTRY.—Please describe to me a method for determining the height of trees and estimating the amount of standing timber?

ABNER H. BARKER.

MR. ABNER H. BARKER,
146 Summer St., Boston, Mass.:

Dear Sir.—Your letter of September 18, addressed to the American Forestry Association, was forwarded to the Forest Service for reply. I take pleasure in sending you, under separate cover, Bulletin 36, "The Woodsman's Handbook," which describes the methods of determining the height of trees and estimating the amount of standing timber. I am also sending you Bulletin 76, "How to Grow and Plant Conifers in the Northeastern States," which will give you information in regard to raising and planting forest trees. I am sorry to say that the Forest Service has no publications dealing with the grafting and spraying of trees. This information can undoubtedly be obtained by writing directly to the Bureau of Plant Industry, Washington, D. C.

RAPHAEL ZON,
Chief of Silvics.

EDITOR AMERICAN FORESTRY.—Being in a charcoal business, I would like to know if you could secure me bulletins or books on the subject. I am just starting a company in Quebec, and I would be obliged to you if I could get good hints and information on the subject.

H. KIEFER, C. E.

Dear Sir.—Your letter of October 9 to the American Forestry Association has been forwarded to this laboratory for reply. The Office of Publication has been requested to send you Forest Service Circular 114, which is the only Forest Service publication dealing with the production of charcoal. The literature on this subject is very meager, and there is practically nothing dealing with charcoal production without the recovery of by-products. It would be a pleasure to give you any further information possible on specific points not mentioned in the above publication.

MCGARVEY CLINE,
Director.

TO STUDY FLOODS

SECRETARY WILSON of the United States Department of Agriculture has decided to establish an experiment station on the Manti National Forest near Ephraim, Utah, for the study of grazing and water protection problems. Bids for the construction of the necessary buildings have been received and it is expected to have the station in working order before winter. Already the gathering of observations on the relations of erosion and run-off to the forest cover have begun.

The Manti Naitonal forest was chosen as the site for this experiment station because it offers exceptionally good opportunities for investigating problems of practical value in connection with regulated grazing. Ephraim and other towns in its neighborhood have suffered severely from floods following violent rainstorms in the mountains, and it has already been proved conclusively that the over-grazed condition of areas on which the natural vegetative cover has been seriously altered is responsible for the formation of torrents and the rapid discharge of debris-laden flood waters. In a recent destructive storm the water ran clear from a part of the watershed which was within the National Forest, and in good condition as a result of well regulated grazing, while from other areas it swept down sand and boulders.

STATE NEWS

North Carolina

Another important step in the campaign for better forest laws for North Carolina was taken at North Wilkesboro on Tuesday evening, October 8. At the call of Mr. C. C. Smoot III, Vice-President of the North Carolina Forestry Association for that district, a meeting was held for the purpose of organizing the forces in Wilkes County which are favorable to forest protection, so that something definite might be accomplished in this direction at the coming session of the Legislature next January. Mr. J. S. Holmes, Secretary-Treasurer of the North Carolina Forestry Association, was present and explained the objects for which the State Association had been organized and what could be accomplished by a local club. A permanent organization was unanimously agreed upon, and the Wilkes County Forest Protective Association was formed, the twenty men present all agreeing to become members. Mr. A. A. Finley was elected President and Mr. W. E. Pharr, Editor of the North Wilkesboro Hustler, Secretary. Mr. C. C. Smoot, of the C. C. Smoot & Sons Tannery, was elected Vice-President for North Wilkesboro Township. These three officers were appointed as a temporary executive committee, to draw up by-laws and put the Association in thorough working order. One vice-president for every township in the county was appointed.

A strong resolution was passed calling on the Wilkes representatives in the next Legislature to do all in their power to secure adequate laws for the protection of the forests of the state from fire.

This is the third County Association organized since the forming of the North Carolina Forestry Association some two years ago. It is composed of the most live and progressive men of the county, and they mean business. They are determined that men favoring state forest protection shall be elected this fall to represent Wilkes County in the next General Assembly.

Vermont

State Forester A. F. Hawes of Vermont has recently returned from Brandon, where with an assistant he has been marking trees for this winter's cutting on the land of Newton-Thompson Manufacturing Company. This concern is taking a very progressive stand in the management of its extensive forest areas, having become interested in better management through some work done under the state forester two years ago in Brandon on land belonging to Miss Julia A. C. Jackson. Mr. Bump, the president of the company, told the state forester that when the forestry work was started in Vermont he thought that the doom of the lumber business was at hand. He has now become satisfied that the lumber industry can only be perpetuated through forestry.

The Newton & Thompson Manufacturing Company is one of the most interesting woodworking establishments in the state, making all kinds of novelties, pill boxes, toys, etc., that are made from wood. Their machinery, which is nearly all automatic, turns out an immense amount of work a day, and about eighty men are constantly employed in the sawmill, machine shop, and turning mill. Practically every kind of native lumber is used, from white pine down to soft maple. It is this opportunity to use inferior woods, and even small pieces, which gives this company such a splendid chance to practice forestry.

The company owns about 6,000 acres in the region, and has now begun a systematic thinning of its more accessible areas so as to insure more rapid growth and a permanent supply of lumber. The areas marked by the state forester this year are mostly of pine growth in the vicinity of Forestdale. The smaller and poorer pines were marked to be cut as well as the inferior hardwoods, such as soft maple and beech. In no case were there any large openings made since an undesirable growth of underbrush is almost sure to follow such a course, especially in that region. In some of the lots the ground was covered with little pine seedlings which have started within a year or so. Wherever these occurred light was admitted by a heavier cutting so as to allow the young seedlings an opportunity to grow. This is a good illustration that pine may easily succeed itself if properly treated, despite the common belief to the contrary. The state forester estimates that much of this land after thinning will grow from 500 to 800 board feet per acre per annum.

Not only is the Newton & Thompson Manufacturing Company practicing forestry on its own lands, but it is persuading some of the other woodland owners in the neighborhood to do likewise. Since their supply comes partially from these neighbors, their interest in the welfare of these wood lots is not altogether unselfish, but it furnishes an excellent illustration of a most advanced forest policy.

In the industrial future of Vermont there will probably be fewer and fewer companies

engaged simply in lumbering. The tendency is toward a closer utilization near the forests. It is such concerns as Newton & Thompson and the International Paper Company, that are dependent upon a permanent wood supply, that will save the forests of Vermont. The state forester is constantly having more demands for advice and for marking. This marking is done for any land owner in the state on areas up to 50 acres a year simply for the traveling expenses and board of the men while doing the marking. In most classes of timber two men can blaze the trees to be cut on 50 acres in two or three days.

Pennsylvania.

The Pennsylvania Department of Forestry has had four of its foresters assisting the Federal Forest Service in the collection of data concerning the wood-utilizing industries within the state. The field work has been completed.

During the spring planting season there were set out on the state reserves two and a quarter million seedlings. Since the planting operations the foresters have been busy opening, cleaning, and improving roads, building fire towers and telephone lines. During the last two months fourteen new telephones were installed and about fifty miles of new telephone line built, or newly acquired lines repaired.

The state has recently acquired a tract of land at $4 per acre which has a grove of tulip poplar covering about fifty acres. Eighty-five per cent of the trees on the area are tulip trees ranging from 4 to 8 inches in diameter and average 80 feet in height. There is also a grove of almost pure black walnut covering twenty acres. The walnuts are straight, tall, and thrifty. The soil is moist and sandy.

The recent Legislature yielded to a large number of petitioners in northeastern Pennsylvania and appropriated $1,000 for the rebuilding of a dam on the state reserve in Pike County. The appropriation was given to the Department of Forestry to carry out the provisions of the act. The department built the dam on the site of an old sawmill dam, and built it considerably higher. The new dam is bedded on solid slate rock, with a concrete toe and proper iron dowels. It is six feet higher than the spillway of the old dam and forms a pond covering about 800 acres.

The forest reserves are to be made recreation grounds for the people as well as to be used for growing timber. This artificial lake makes one of the largest in the state and will afford a splendid opportunity to many to hunt and fish. At the same time, under the protection of the forestry officials, game birds and fish will no doubt multiply in the locality.

Connecticut

Former State Forester Samuel N. Spring of Connecticut has taken up his duties at Ithaca, as professor of forestry in the New York State College of Agriculture. W. O. Filley, who was Mr. Spring's assistant for the past three years, and who since October 1, 1911, has held the appointment as assistant state forester, has succeeded him. A. E. Moss, recently of the Forest Service, is to be Forester Filley's assistant, although no assistant state forester will be appointed at present.

Alabama

John Wallace, Jr., game and fish commissioner of Alabama, is advocating a movement looking to converting all state lands, whether held in fee or in trust, into state game refuges and forest preserves.

Alabama owns hundreds of thousands of acres of swamp and overflowed lands, Sixteenth Section school lands and tax redemption lands. It is Commissioner Wallace's purpose, by an Act of the Legislature, to set aside these lands as nesting, resting and breeding places for birds and game, to be held forever sacred for that purpose, also for forest preserves. The Department of Game and Fish would employ wardens to patrol the lands and see to it that the birds and game are not disturbed, that the growing timber is not cut down and destroyed and that no fire is set to the forests.

This movement has gained great impetus in Alabama, and the people seem to be a unit in demanding that the scheme be enacted into a law. In addition to this specific plan, Wallace is endeavoring to work out a general conservation movement which contemplates the creation of a state conservation commission to have charge of the management, control and development of all of the state's natural resources.

Maryland

The Maryland State Board of Forestry is making extensive preparations for the fire season this autumn. Additional patrolmen have been engaged and several lookout stations are being provided for in the mountain section.

Mr. Chapin Jones, who came to Maryland as assistant state forester on August 1, will have charge of the fire protection work. Mr. Jones graduated from the Yale Forest School in 1909 and has since been in the employ of the United States Forest Service, forestry department of the Pennsylvania Railroad and in State work in New Hampshire.

Maryland is co-operating with the Forest Service under the Weeks Law and, with the increased appropriations for fire protection

secured last winter, the state is in good shape to handle the forest fire situation.

New York

The New York Conservation Commission has adopted the policy of fall shipments of trees, and a large number of orders have been filled and many plantations made during this present fall season.

Three hearings have been held, and a field investigation will be commenced within the next week in order to determine the efficiency of the top-lopping law.

Bulletin No. 8 on the three new forest taxation laws has been issued, and various matters in connection with the enforcement of these laws are now under consideration by C. R. Pettis.

The Commission has also issued Bulletin No. 1 on general forestry and Bulletin No. 7 on shade trees, by Forester Gaylord.

A new nursery of five acres has been established at Lake Clear, and about three-quarter million trees have been transplanted, and an equal number of trees have been set out on state land near Paul Smith's.

Forester Rosenbluth is engaged in preparing a working plan for the state prison lands at Dannemora, in the Adirondacks.

An exhibit of the forestry work of the Commission was made, not only at the State Fair, but at about fifteen county fairs.

The reports of forest fires will approximate about 5,000 acres for the entire season up to the present time. Last year nearly 40,000 acres were burned. The decreased loss is due largely to the increase in the number of mountain stations and greater efficiency in the fire protective work as indicated by the fact that the number of fires this year were as great as last year, and the drought during June and July was as severe as in former years.

Massachusetts

No state in the union has made more rapid progress in building up a constructive forest policy than has Massachusetts during the past five years. The recommendations of State Forester Rane made to the Legislature from year to year have been received with favor, and all of the important ones have been enacted into legislation. Perhaps the most gratifying accomplishment of the department has been the development of the forest fire service, which has now been brought up to the highest point of efficiency. Eighteen lookout stations have been in operation throughout the season, from which over 2,000 fires have been reported. The promptness with which these fires have been discovered and reported by the observers has made possible in most cases their extinguishment before serious damage had resulted. In addition to the above system of reporting fires, arrangements have been made with the United States Post Office Department to have all rural and star route mail carriers report to the forest wardens or deputies any fires which may occur on lands bordering their routes. Early last April the Massachusetts Division of the Boy Scouts of America generously volunteered to co-operate with the state in its efforts to reduce the forest fire evil, and by reporting fires and aiding in their extinguishment have been a valuable factor in making the work a success. Each scout master has been furnished a copy of the fire laws and book of instructions published by the forestry department, containing the names of all forest wardens and deputy wardens in the state.

Recognizing the importance of a change in the present methods of taxing forest lands if the encouragement is to be given forest land owners, which is necessary to constructive forestry, the Legislatures of 1911 and 1912 passed a resolve providing for an amendment to the Constitution, empowering the General Court to prescribe the method of taxing such lands. This proposed amendment will be submitted to the voters of the state at the coming election for their acceptance or rejection.

If it is accepted, and it is the general belief it will be, a committee appointed by the Massachusetts Forestry Association and the Boston Chamber of Commerce, working jointly, will begin immediately the preparation of a bill to be introduced into the incoming Legislatures, designed to eliminate some of the objectionable features of the present method of taxing wild or forest lands.

Michigan

Professor Tyler, of the Michigan Agricultural College, announces the formation of local organizations in several counties to prevent the useless waste of trees. Besides preventing the waste, the organizations will also attempt to teach the farmers and others interested how to utilize their waste ground in the interest of reforestation. Mr. Tyler says: "Unless we do something for the trees there will soon be no forests in the northern part of Michigan on account of the great forest fires, and in the southern part we are tree destroyers instead of tree planters. Only 1 or 2 per cent of the number of trees cut down are replanted in southern Michigan."

Under the plan which Mr. Tyler has worked out an experimental woodlot of five acres will be provided in the community where each organization is affected. The farmer who gives up five acres of his land to this work will have to contract with the college not to cut a tree during the first twelve years nor make any radical move without first obtaining the permission of the extension service of the college. Seedlings will be furnished by the college and set out

under the direction of Mr. Tyler. If he says plow the land and sow oats in August, the farmer will have to do so, but all the profits of the experimental work will be his and the trees will be his at the end of the twelve years. If any question arises which he can not answer, he has back of him the forestry department. Should the forestry department be unable to answer it, then it can go to the National Government.

Indiana

An experiment with the culture of Jersey pine trees in Indiana will be made by the State Board of Forestry as a part of its work for the coming year. The trees will be planted on the forest reservation in southern Indiana.

Charles C. Deam, secretary of the board, asserts that the Jersey pines are not grown extensively in Indiana at this time, and that the board is desirous of introducing them, particularly to test their productiveness in this state. Mr. Deam says pine trees are peculiar in that they thrive in poor soil. There are some on the reservation now measuring two feet in diameter.

At a meeting of the board recently the year's work at the reservation was mapped out. Fifty acres of various sorts of trees will be planted during the year. The list includes hickory, sycamore, arlanthus and locusts. In addition to these there will be three kinds of oak planted, the red, white and burr oaks.

Tennessee

The Nashville Board of Trade has appointed a committee of prominent members to consider measures for the preservation of the forests of Tennessee. Charles M. Morford, a lumber manufacturer and shipper, is chairman of the committee, and most of the members are lumbermen who belong to the board of trade. The object of the board of trade is to co-operate with the Nashville Lumbermen's Club in taking such steps as can be taken to conserve the forestry resources of the state. It is probable that the next Legislature will be asked for an appropriation to aid in the enforcement of the forestry laws of the state.

Kentucky

The new forest policy of Kentucky was outlined recently by J. E. Barton, state forester, who was the guest of the Louisville Hardwood Club. Mr. Barton took the first opportunity to convince the lumbermen that the work of the forester and the practical timberman are mutually beneficial, and made so favorable an impression that he was elected an honorary member.

The plans of the new state forestry board, of which he is the active representative, include the following:

The establishment of nurseries, both for demonstration purposes and as a business proposition, including the sale of seedlings to private concerns which are engaging in forestry work.

The purchase of lands and the acquirement of others by gift where forest reserves may be established and timber raised in commercial quantities.

The study of the possibilities of preventing waste in timber logging and manufacturing, and the utilization of by-products, involving the establishment of a laboratory for the use of lumbermen and wood users.

The protection of the forests by the enactment of adequate laws looking to proper fire protection and the prevention of grazing on forest lands, which would result in young trees being killed or seeds destroyed.

The study of streams and stream flow, and regulating them by the planting of forest at their headwaters, thus preventing floods. Study of water power possibilities is also to be included in this provision.

Co-operation with individuals in examining timber tracts, laying out a plan of scientific management and aiding in the operation of the property. This work will be begun early in 1913, when the forestry work will have been fully organized.

Montana

President Taft has issued proclamations changing the boundaries of the Missoula and Madison National Forests, Montana. From the former 4,960 acres are eliminated and from the latter 68,140 acres. These eliminations are the result of field examinations which the Department of Agriculture has been making in pursuance of a general plan to correct the National Forest boundary lines.

The areas eliminated from the Missoula National Forest are along the borders of the Flint Creek and Rock Creek exclusion of the Southern Division. They consist of small areas along the foothills, chiefly valuable for grazing purposes.

The greater part of the Madison elimination embraces what is locally known as the Lower Madison Basin and lies in two main bodies, one in Tps. 9 and 10 S., R. 1 W., and the other in Tps. 11, 12 and 13 S., Rgs. 1 and 2 E. Another rather large exclusion occurs in Tps. 9 and 10 S., R. 4 W. The remaining areas are small tracts at various points along the borders of the forest. Most of the lands excluded are grazing lands, although some areas in the Lower Madison Valley are susceptible of cultivation.

The public lands within the areas were by the same proclamation withdrawn for classification under the Act of June 25, 1910, to be restored to settlement and entry at the discretion of the Secretary of the Interior.

New Jersey

The New Jersey Forest Commission announces that the Forest Fire Patrol maintained in North Jersey in co-operation with the United States Forest Service is being reorganized for the fall work. Instead of emphasizing particularly the railroad exposure, as has been done during the spring and summer, attention will be centered more on the danger in the woods.

During the summer there have been 93 fires reported by patrolmen, none of which were allowed to assume any size, and most of which were put out by the patrolmen themselves, thereby preventing possible forest fires, with their consequent damage and costs. Whether it be primarily due to the patrol, to increased activity and efficiency of the local wardens, or to a growing public interest in forest protection, there is no doubt that fires are markedly fewer and less serious in this section than heretofore.

The fall work is planned with especial reference to automobile and nutting parties and the sportsmen. A small number of men went on duty on October 1 at places particularly exposed, and the full force will be available from October 15 to the end of the season. The patrol this year will differ from that of last season in that the patrolmen will be less restricted to the roads and are expected to pick up those responsible for fires in the woods. Though their first duty is to watch for and notify the fire wardens of fires, they are particularly instructed and are empowered to arrest all violators of the law, in the woods or along the roads, whether building fires without permits or dropping lighted matches, tobacco, etc. In this way the Forest Commission expects to put a stop to the carelessness with fire so prevalent among those in the woods for an outing or hunting trip.

These officers, with the rural mailmen, who also are serving as patrol under an order of the Postmaster General issued last spring, are expected to minimize the fire danger this season.

STATE FIRE WARDEN.

Prof. Ferguson Returns to Penn State

After an absence of one year, during which time he has been head of the Department of Forestry at the University of Missouri, Prof. John A. Ferguson returns to the Department of Forestry at the Pennsylvania State College as its head. Before going to Missouri Professor Ferguson was connected with this school for three years and was in charge for nearly two years in the absence of the head of the department.

California.

A great deal of interest has been displayed of late by the various women's clubs throughout the State concerning forestry, especially that phase of it dealing with forest fire protection. At a recent meeting of the Northern District of the Federation of Women's Clubs, Forestry in California was the main issue of discussion. During this meeting, many resolutions concerning forestry were adopted, chief of these being to assist in a real publicity campaign against forest fires.

Forestry in California is still in its infancy and such cooperation as exists, at present, between the various Women's Clubs and this department, concerning the educational feature of the work, is very encouraging indeed.

So far, the work of the department has necessarily been of an educational nature, due to a lack of funds to carry on any other work. However, with the small amount that was available—an investigation of cut-over and timbered land, with special attention paid to slash conditions and waste in logging, was made during the summer months. The results of these investigations will be fully discussed in the biennial report of the State Forester which will be available about January 1, 1913.

California is badly in need of a forest fire system and legislation looking toward that end is being drawn up with a view of presenting it at the next legislature.

Much valuable information concerning the kinds and amounts of wood produced in the State and demanded by the industries manufacturing finished products, as well as a directory of such manufacturers, is contained in a volume recently issued by the State Board of Forestry, in cooperation with the U. S. Forest Service, and entitled "Wood Using Industries of California."

The volume is for general distribution among people who are interested and a copy may be obtained by addressing the State Forester, Sacramento, California.

Mr. R. H. Boynton has resigned his position as Assistant State Forester to go into private business. Mr. Ralph W. Sloss, who has been a field assistant in the department for the past year, has been appointed to fill the position vacated by Mr. Boynton.

Early Conservation Ideas

In the provincial charter of 1691, under which the Plymouth colony and the province of Maine were united with Massachusetts, it was provided that all trees of the diameter of twenty-four inches and upward, twelve inches from the ground, growing upon land not heretofore granted to any private person, should be reserved to the crown for the furnishing of masts for the royal navy.

A surveyor-general of woods was appointed to see that this provision of the charter was carried into effect. Near the coast all white pines of suitable dimensions were marked with the "broad arrow"—three cuts across the bark with an ax, like the track of a crow. This was the King's mark.

Long after the Revolution had obliterated the royal authority men who had been taught in boyhood to respect the King's mark hesitated to cut such trees.

In felling a tree it was necessary to "bed it" to prevent its breaking. This was done by cutting the small growth and placing the small trees across the hollow, so that there should be no strain upon one section more than upon another when the monster pine struck the ground.

The mast was hauled out of the woods on one strong sled, whether in winter or summer, and so many oxen were required that the hind pair were often choked in crossing a hollow, being hung up in their yoke by the pulling of those ahead of them.

FIRE NOTICES TO TEACHERS

The State Forestry Department of Minnesota has mailed 15,000 circulars to superintendents of high schools and public school teachers of the State, calling attention to Fire Prevention Day. Approximately seven circulars will be given each teacher, and observation of the day is asked in the public schools of the State.

The circulars sent out by the State Forester call attention to the danger of fires, and ask an observance of rules for the prevention of serious conflagrations.

"Minnesota has suffered more than any other State through forest fires," the circular reads. "Hundreds of our people have been burned to death. Untold millions of dollars worth of property has been consumed."

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INDIA'S GREAT FORESTS

The hill forests of the United Provinces and the Punjab in India hold very extensive stores of spruce with which is associated the well-known silver fir. Both these species yield timber somewhat similar to the European deal, which is used for planking, tea boxes, packing cases, and shingles. If creosoted the timber should be suitable for railway sleepers. It would yield enormous quantities of cheap planking, and there is little doubt that the wood both of the Himalayan spruce and silver fir would be excellent for the manufacture of matches and for paper pulp. The trees grow to a very large size, with a girth of 20 feet, and a height of 200 feet is by no means uncommon.

AUSTRALIA'S IMPORTATIONS

During 1911 *Australia imported from the United States timber valued at* $13,850,000, *compared with* $10,470,000 *during* 1910. *During the earlier year that country exported timber valued at* $4,840,000, *compared with* $5,105,000 *during* 1911. *Of the forest products imported during* 1911 *wood and manufacturers of wood imported from the United States amounted to* $9,658,282, *compared with* $8,786,580 *in* 1910.